3.6-44.3mm 12X motorized day/night dome colour camera
4 305 21
3.5-94.5 mm 27X motorized day/night dome colour camera
4 305 22
3.6-44.3mm 12X weatherproof motorized day/night dome colour camera
4 305 23
3.5-94.5 mm 27X weatherproof motorized day/night dome colour camera
4 305 24
3.5-129.5 mm 37X weatherproof motorized day/night dome colour camera
4 305 25

4 305 21

4 305 22

4 305 23

4 305 24/25

USER MANUAL

LE03668AB

Important Safety Guide

Read, heed and follow all the Instructions

Read all the safety and operating instructions before using the product.

Keep this manual

Keep this manual for reference in future.

Attachments / Accessories

Use only the attachments or accessories specified by the manufacturer.

Installation

- Do not install near any heat resources such as radiators, heat registers, stoves, or other appratus including amplifiers that product heat. Improperly installed product may fall, cause serious injury to a child or adult and damage the product.
- Do not block any ventilation holes or openings. Install in accordance with the manufacturer's instructions.
- Use only with the cart, stand, tripod, bracket, mounting devices, or table specified by the manufacturer.
- Installation should be done only by qualified personnel and conform to all the instructions by the manufacturer.
- Refer all servicing to qualified service personnel.
- Unless the product is specifically marked as IP67, more than IP67 or confirmed by the manufacturer, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
- Do not load on the product.
- Use stainless steel hardware to fasten the mount.
- To prevent damage from water leakage when installing a mount outdoors on a roof or wall, apply sealant properly around holes.
- These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other that contained in the operation instructions unless you are qualified to do so.
- Use only replacement parts specified by the manufacturer.

Power source

This product should be operated only from the type of the power source indicated on the marking label.

CAUTION

Operating

- Before using, make sure that the power supply and others are properly installed.
- While operating, if any abnormal condition or malfunction is observed, stop using the product immediately and then contact your local dealer.

Handling

- Do not disassemble or tamper with the parts inside the product.
- Do not drop or subject the product to shock and vibration as this can damage the product.
- Care must be taken when you clean the clear dome cover. Especially, scratch and dust will ruin the quality of the product.

Installation and Storage

- Do not install the product in areas of extreme temperature, which exceed the allowable range.
- Avoid installing in humid or dusty places.
- Avoid installing in places where radiation is present.
- Avoid installing in places where there are strong magnetic fields and electric signals.
- Avoid installing in places where the product would be subject to strong vibrations.

Table of contents

Important Safety Guide 2

CAUTION 3

1 INTRODUCTION 6

1.1 MODEL CODE 6

1.2 FEATURES 6

1.3 Package Component 9

1.4 Main Part Description 11

2 INSTALLATION 15

2.1 DIP Switch Setup 15

2.2 In-Ceiling Mount Installation (4 305 21 Model) 19

2.3 Installation with Surface Mount Bracket (4 305 21 Model) 20

2.4 Direct Installation on the Ceiling (4 305 22 model) 21

2.5 Installation using In-Ceiling Mount Bracket (4 305 22 model) 22

2.6 Installation using Ceiling Mount Bracket (4 305 22 model) 23

2.7 Installation using Wall Mount Bracket (4 305 22 model) 24

2.8 Installation with Ceiling Mount Bracket (4 305 23/4 305 24/4 305 25 Models) 25

2.9 Installation with Wall Mount Bracket (4 305 23/4 305 24/4 305 25 Models) 26

2.10 Wiring and Cabling (4 305 21/4 305 23/4 305 24/4 305 25) 27

3 Operation 32

3.1 Check Points before Operation 32

3.2 Check Points for Preset and Pattern Function before Operation 32

3.3 OSD Menu 33

3.4 Reserved Presets (Hot Keys) 33

3.5 Preset 34

3.6 Swing 34

3.7 Pattern 35

3.8 Group 36

3.9 Other Functions 37

3.10 OSD Display 38

4 OSD MENU 39

4.1 Quick Programming Guide 39

4.2 Main Menu 39

4.3 Display setup 40

4.4 Privacy Zone Mask Setup 41

4.5 Camera Setup (Dome Camera Setup Menu) 43
4.6 Motion Setup 47
4.7 Preset Setup 50
4.8 Swing Setup 53
4.9 Pattern Setup 54
4.10 Group Setup 55
4.11 System Initialization 58
5 Specifications 60
5.1 Dimension 65

1 INTRODUCTION

1.1 MODEL CODE

Ref.	4 305 21	4 305 22	4 305 23	4 305 24	4 305 25
Serie	Mini plastic small	Mini Aluminium with fan/heater	Mini Aluminium with fan/heater	Aluminium with fan/heater	Aluminium with fan/heater
Outdoor serie	NO		YES		
Video signal	PAL				
Wall mount bracket	NO	YES			
Rated power :	12 VDC				
In / Out Trigger alarm	3 In / 1 Out	4 In / 2 Out	3 In / 1 Out		

1.2 FEATURES

Powerful Zoom Camera & Setup Options

	4 305 21	4 305 22	4 305 23	4 305 24	4 305 24
Optical Zoom	×12	x27	x12	x27	x37
Digital Zoom	×12	x12	x12	x12	x12
Max. zoom magnification	×144	×324	x144	x324	x444
High light compensation	NO	NO	NO	YES	YES
Privacy Masks	8	8	8	8	8
Day & Night	YES				
WDR	NO				YES
Focus Mode	Auto-Focus, Manual Focus, Semi-Auto Focus				
OSD Menu	YES				
Sensor	¼"super HAD color CCD	¼" super HAD color CCD	¼" super HAD color CCD	¼" super HAD color CCD	

Powerful Pan/Tilt Functions

- MAX. 360°/sec High Speed Pan/Tilt Motion
- With the Vector Drive Technology, Pan/Tilt motions are accomplished along the shortest path. As a result, the time to target view is remarkably short and the video on the monitor is very natural in monitoring.

- With the Micro-Stepping Control Technology, the video looks very natural at high zoom magnification during a jog operation on a controller since the camera can be controlled by 0.05°/sec. Hence it is very easy to make the camera focus on desired target views at high zoom magnification. Additionally it is easy to make the camera focus on desired positions with zoom-proportional pan/tilt movement.

Preset, Pattern, Swing, Group, Privacy Mask and More…

- MAX. 127 Presets are programmable and each preset can have its own parameter values independently from the other presets.
- For an example, refer to the below table.

Preset No.	White Balance	Auto Exposure	•••	Label	Remarks
Preset 1	Case A	Case 3		"ENTRANCE"	
Preset 2	Case C	Case 5		"WAREHOUSE"	
Preset 3	Case V	Case 2		"OFFICE"	
•••					
Preset 95	–	–	–	–	Reserved for OSD Menu
•••					
Preset 128	Case K	Case 9		"TERRACE"	

- MAX. 4 Patterns are programmable. This function is that the camera memorizes the path (mostly curve path) by the joystick of the controller and revives the trajectory operated by the joystick as closely as possible.
- MAX. 8 sets of Group are programmable. This function is that the camera memorizes the combination of Presets, Pattern and/or Swings sequently and runs Presets, Pattern and/or Swings repetitively. A Group can be combined upto 20 functions with any of Preset/Pattern/Swing.
- 8 Privacy Masks are programmable, not to intrude on any other's privacy ：

PTZ (Pan/Tilt/Zoom) Control

- With the RS-485 communication connection, MAX. 255 units of cameras can be connected to a single controller.
- Pelco-D or Pelco-P protocols can be selected as a control protocol in the current firmware version.

OSD (On Screen Display) Menu

- OSD menu is provided to display the status of camera and to configure the functions interactively.
- The information such as Camera ID, Pan/Tilt Angle, Direction, Alarm Input and Preset is displayed on screen.

Alarm In/Out Function

- 4 305 22 : 4 alarm sensor inputs and 2 alarm output relays
- 4 305 21/4 305 23/4 305 24/4 305 25 : 3 alarm sensor inputs and 1 alarm sensor outputs
- Alarm sensor input is decoupled with photo-couplers to avoid external electric noise and shock perfectly.

- Both of N.O.(Normal Open) sensors and N.C.(Normal Close) sensors can be used and the signal range of the sensor input is from DC 5.0V to 12.0V for various applications.
- The camera can be set to move to a Preset position or to run functions such as Pattern, Swing and Group when there are external sensor activations. Also “Post Alarm” function is possible, which is supposed to activate after user-defined time period and sequentially in succession to the action by external sensor activations.

Reserved Presets (Hot Keys)

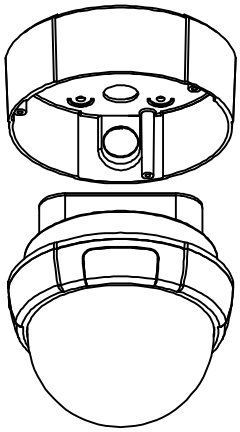
- Most camera setup options can be set up easily and directly with the reserved presets (Hot Keys), without entering into OSD menu. For more information, refer to “Reserved Presets (Hot Keys)” in this manual.

Perfect Outdoor Environment Compatibility and Easy Installation

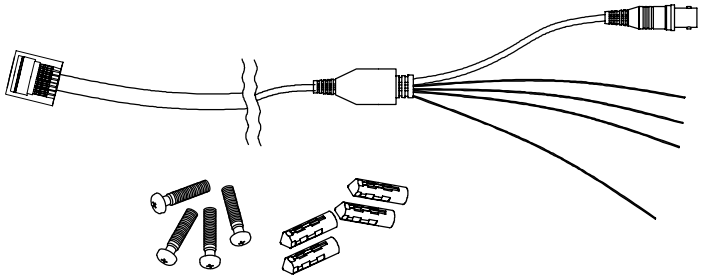
- 4 305 23/4 305 24/4 305 25 : The fans and heaters are built-in in the camera for cold and hot temperature environment. Also idealistic mechanical design protects the camera from water and dust. (IP67 when installed properly with wall mount bracket only)

1.3 Package Component

(4 305 21 Model) Product & Accessories

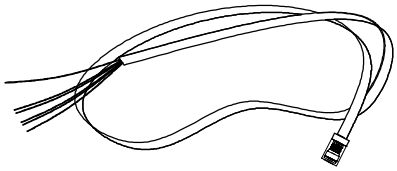


Main Body & Surface Mount Bracket



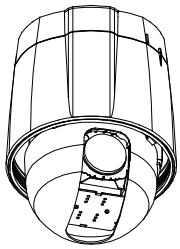
Default Accessories

[Main Cable, Calblock, Screws : Tapping M4×16, Tapping M4×25, Machine M3×6, Machine M3×8]

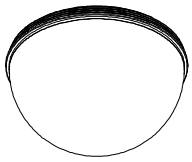


I/O Cable

(4 305 22 Model) Product & Accessories



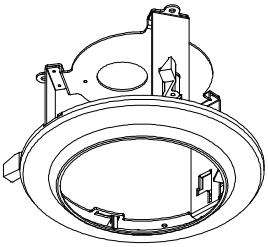
Main Body / Terminal Cover



Dome Cover

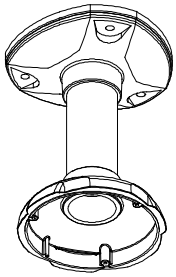
Screws

Optional brackets



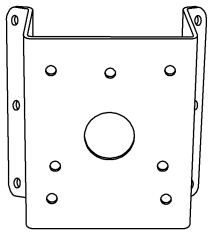
In-Ceiling Mount Bracket

4 305 96



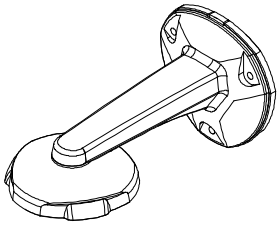
Ceiling Mount Bracket

4 305 97



Corner bracket

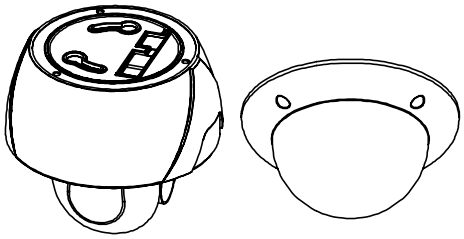
4 305 98



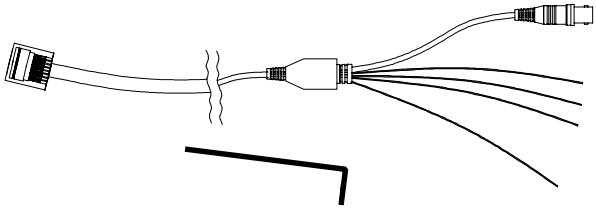
Wall mount bracket

4 305 94

(4 305 23/4 305 24/4 305 25 Models) Product & Accessories

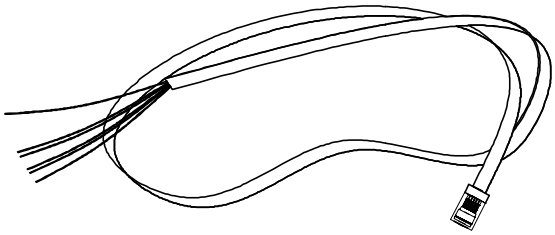


Main Body & Surface Mount Bracket

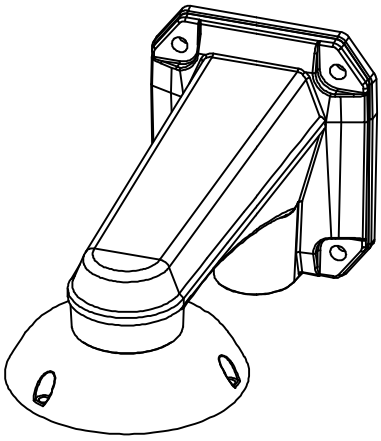


Default Accessories

[Main Cable, Wrench]



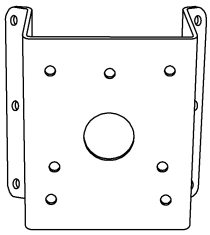
Accessories for The Models with Alarm In/Out Function [I/O Cable]



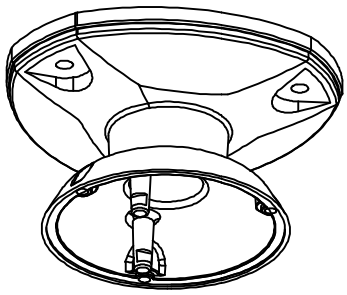
Wall Mount Bracket

[Screws : Machine M5×15, Hex Lag #14×50]

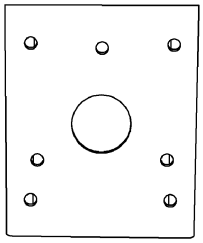
Optional Brackets



Corner bracket 4 305 98



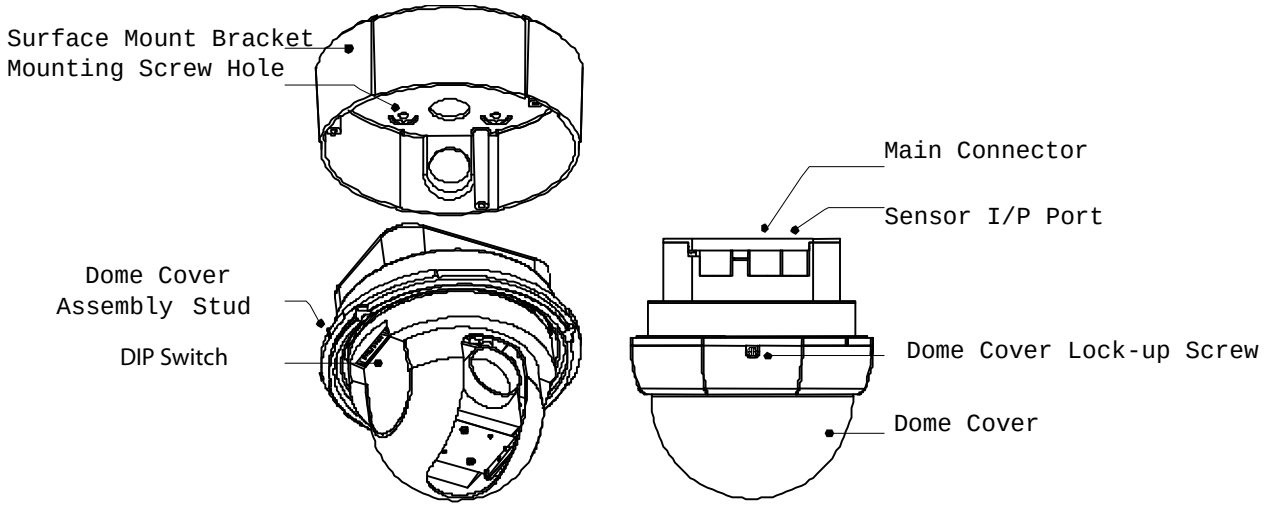
Ceiling Mount Bracket 4 305 95



Pole bracket 4 305 99

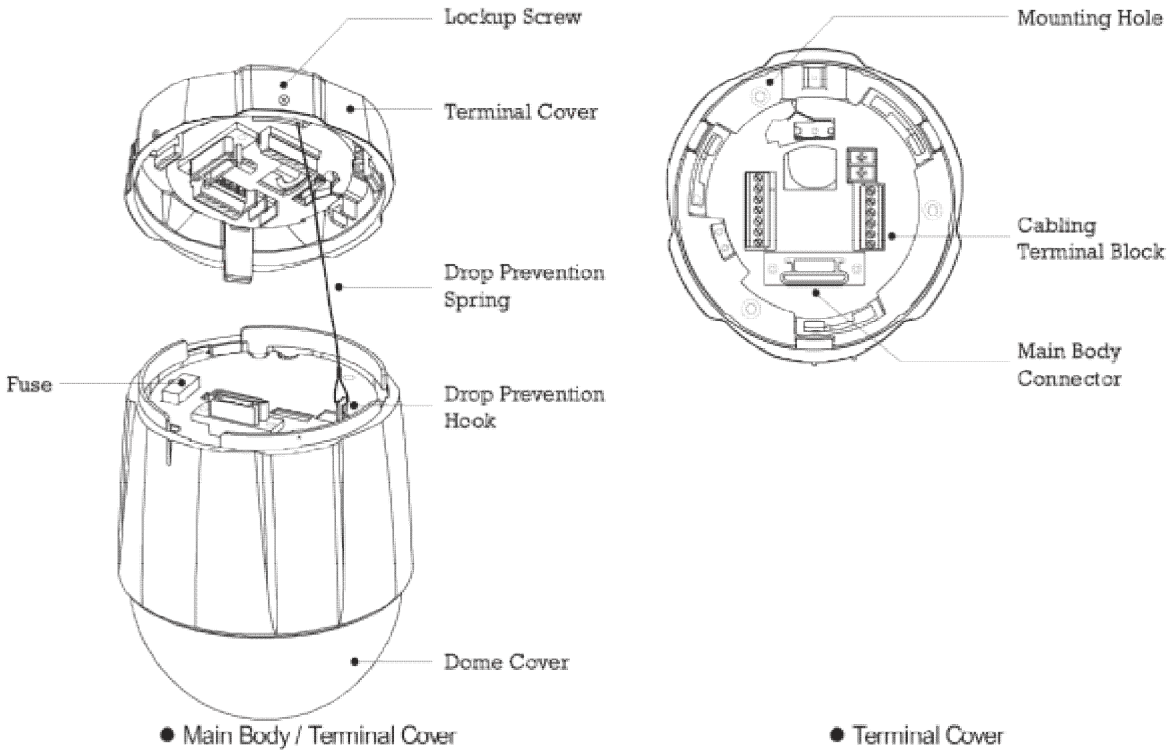
1.4 Main Part Description

(4 305 21 Model)



● Dome Cover	Do not detach the protection vinyl from the dome cover before finishing all the installation process to protect the dome cover from scratches or dust.
● Dome Cover Lock-up Screw	Used to lock up the dome cover after assembling the dome cover with the main body.
● Dome Cover Assembly Stud	Used to line up the stud on the main body and the stud on the dome cover when assembling the dome cover with the main body.
● DIP Switch	Used to set up camera IDs and protocols.
● Surface Mount Bracket & Mounting Screw Hole	Used for surface mount type, wall mount type and ceiling mount type. They are not used for in-ceiling mount type.
● Main Connector	Used for the power wire, the video cable and the RS-485 communication cable connection.
● Sensor I/O Port	Used for the sensor in/out connection.

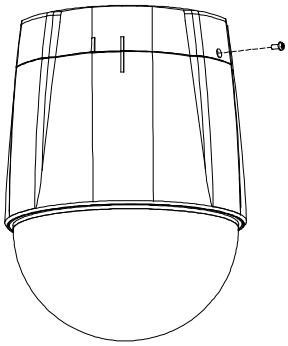
(4 305 22 Model)



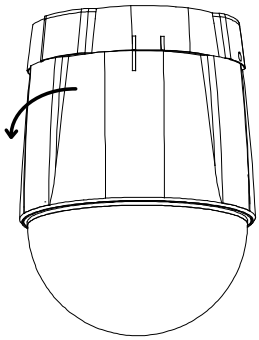
● Dome Cover	Do not detach protection vinyl from dome cover before finishing all installation process to protect dome cover from scratches or dust
● Terminal Cover	This is used to install the camera directly on the ceiling or attach to the other brackets such as in-ceiling, ceiling and wall mount. After separating this cover first and then attach this directly to ceiling or to the other bracket. Camera must be assembled at the last stage.
● Drop Prevention Spring Drop Prevention Hook	This part keeps the camera from dropping during installation and maintenance. After install the Terminal Cover, please, hang the spring to the drop prevention hook of main body as shown in picture for further tasks.
● Lockup Screw	After assembling Terminal Cover to main body, screw Terminal Cover to main body to protect them from separation by vibration and so on.
● Fuse	If the fuse is burnt to protect your came from over-current damage, the fuse have to be replace with new one. The fuse specification is 250V 2A. However, we recommend consulting with supplier to remove the cause of over-current.
● Cabling Terminal Block	During installation, Power, Video, Communication, Alarm I/O cables are connected on to this cabling terminal block.

Terminal Cover Disassembling

① Remove the Lockup Screw as shown bellow.

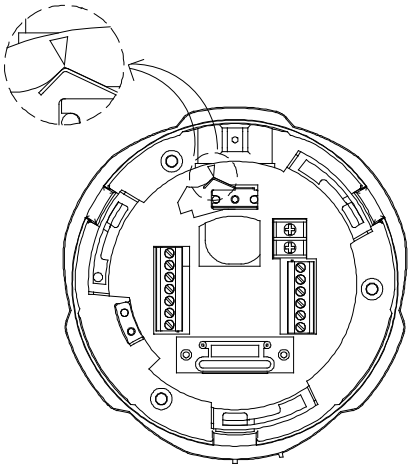


② Turn main body on its axis in CCW(Counter-clockwise) direction and separate it from Terminal Cover.

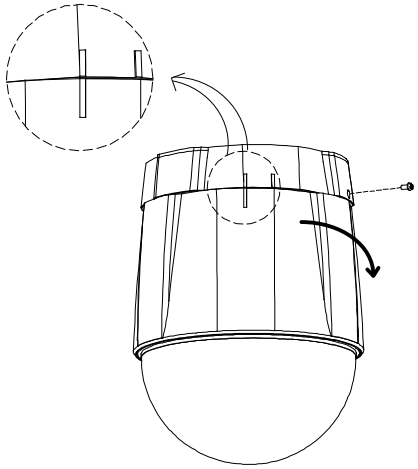


Terminal Cover Assembling

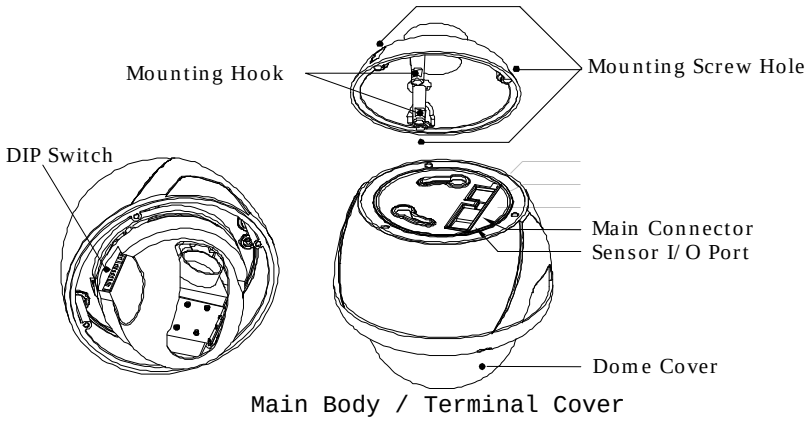
① Check if the summit of the Plate Spring is located at the arrow mark as shown in the dotted circle.



② Check the 2 mold line for assembly before starting assembly. Line up the mold lines as shown in the dotted circle and turn main body on its axis in CW(Clockwise) direction and assemble main body to Terminal Cover. After assembling them, screw main body to Terminal Cover to protect them from separation by vibration and so on.



(4 305 23 Model)



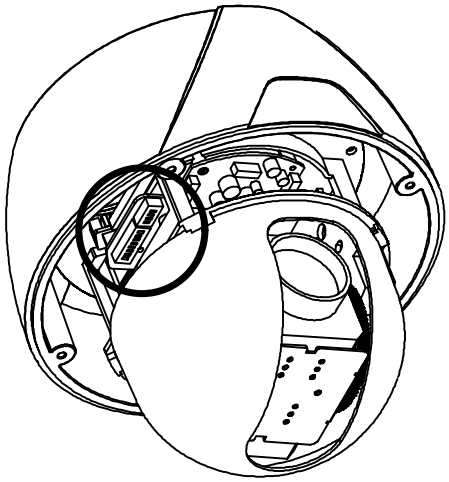
- Dome Cover — Do not detach the protection vinyl from the dome cover before finishing all the installation process to protect the dome cover from scratches or dust.
- DIP Switch — Used to set up camera IDs and protocols.
- Mounting Hook — Used to assemble the main body with wall mount bracket or ceiling mount bracket. Insert the mounting hooks into the holes on the surface of the main body and turn the main body.
- Mounting Screw Hole — Used to assemble the main body with a bracket with screws.
- Main Connector — Used for the power wire, the video cable and the RS-485 communication cable connection.
- Sensor I/O Port — Used for the sensor in/out connection.

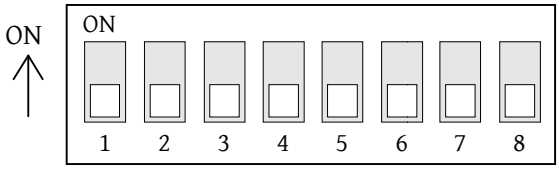
2 INSTALLATION

2.1 DIP Switch Setup

(4 305 21/4 305 23/4 305 24/4 305 25 models)

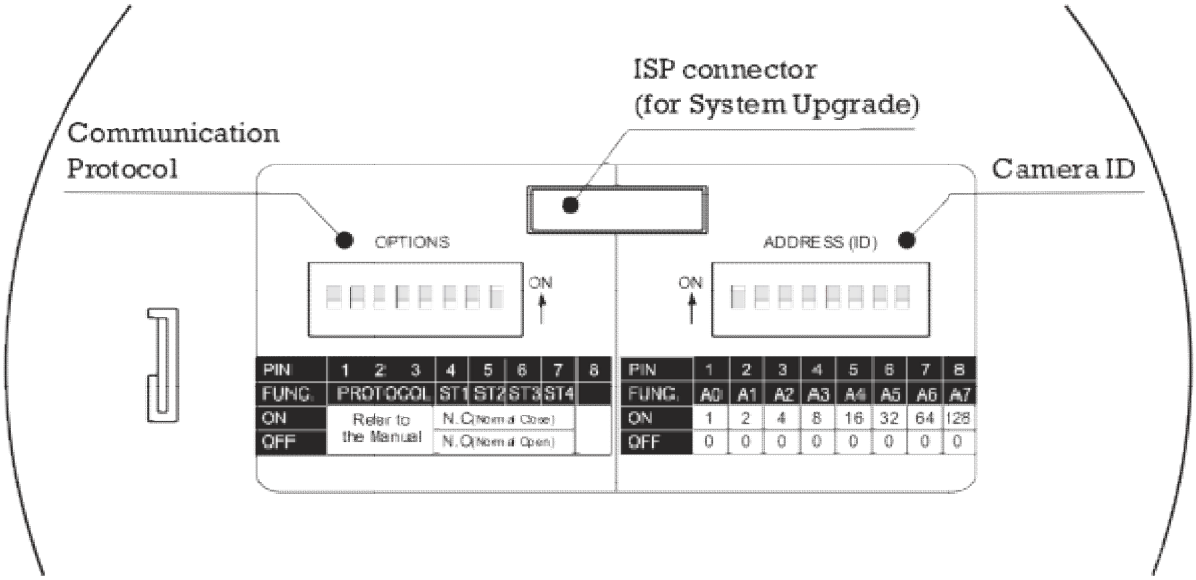
Before installing the camera, set up the DIP switch to configure the camera ID and the communication protocol.





(4 305 22 model)

Before you install the camera, you should set the DIP switches to configure the camera ID, communication protocol. **Do not use the ISP connector. (Authorized person only !)**


ISP connector
(for System Upgrade)
Communication
Protocol
Camera ID
OPTIONS
ADDRESS (ID)
ON
ON
PIN 1 2 3 4 5 6 7 8
FUNC. PROTOCOL ST1 ST2 ST3 ST4
ON Refer to the Manual N.C(Normal Close)
OFF N.O(Normal Open)
PIN 1 2 3 4 5 6 7 8
FUNC. A0 A1 A2 A3 A4 A5 A6 A7
ON 1 2 4 8 16 32 64 128
OFF 0 0 0 0 0 0 0 0

Camera ID Setup

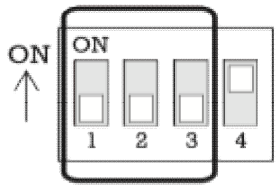
- ID numbers of cameras are set up with binary numbers. See the examples shown below.

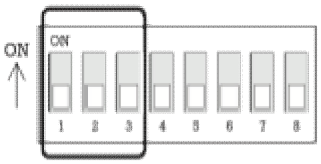
Pin	1	2	3	4	5	6	7	8
Binary Value	1	2	4	8	16	32	64	128
Ex : ID=5	on	off	on	off	off	off	off	off
Ex : ID=10	off	on	off	on	off	off	off	off

The camera ID range is "1~255". **Camera ID must not be "0"!** Factory default of Camera ID is 1.

- The factory default of the camera ID is "1".
- Match the camera ID with the Cam ID setting of your DVR or Controller to control the camera.
- If you are connecting a single camera to a controller, terminate the camera. When connecting more than one camera to a single controller, terminate the last camera on the communication line. The last camera means the camera farthest in cable length from the controller.
- Note that the total length of the communication cable between a controller and the camera(s) on the same communication line must be less than 1.2Km

Communication Protocol Setup



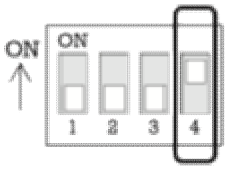


- Select the appropriate Protocol with DIP switch combination.

Switch State			Protocol/Baud rate
P0 (Pin 1)	P1 (Pin 2)	P2 (Pin 3)	
OFF	OFF	OFF	PELCO-D, 2400 bps
ON	OFF	OFF	PELCO-D, 9600 bps
OFF	ON	OFF	PELCO-P, 4800 bps
ON	ON	OFF	PELCO-P, 9600 bps
Otherwise			Reserved

- If you want to control using DVR or P/T controller, their protocol must be identical to camera. Otherwise, you can not control the camera.
- If you changed camera protocol by changing DIP S/W, the change will be effective after you reboot the camera.
- Factory default of protocol is "Pelco-D, 2400 bps".

Terminal resistor Setup



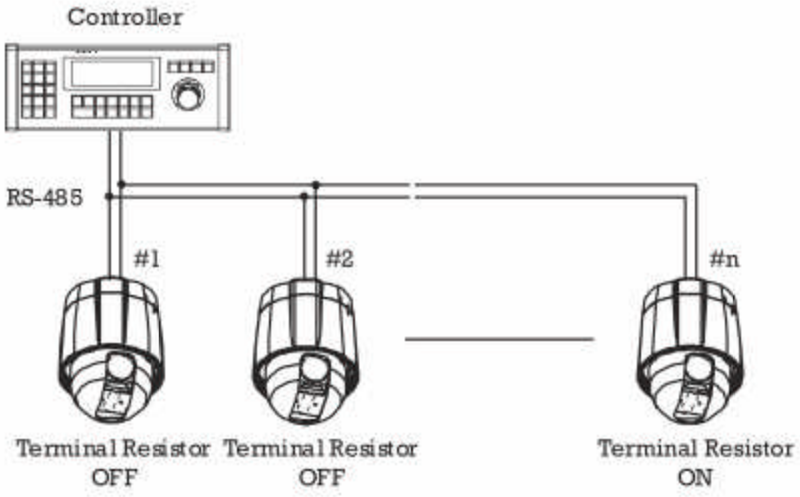
Terminal resistor is used if your system is one of following two cases.

- **Case1: Control cable between camera and controller is relatively very long (1:1 connection)**

If communication cable is very long, the electrical signal will bound in the terminal point. This reflected signal cause distortion of original signal. Accordingly, the camera can be out of control. In this case, the terminal resistor of both sides i.e. camera and controller must be set to 'ON' state.

- **Case2: Multiple cameras are controlled at the same time**

Due to similar reasons with case 1, the terminal resisters of controller and the last camera must be set to 'ON' state. Last camera means decided by cable length. Do not turn on the terminal resistor of all cameras.



Sensor Type Setup

- If you want to use Alarm Input, the types of sensor must be selected. The sensor types are Normal Open and Normal.

⊙ Normal Open Output Voltage is high state when sensor is activated.

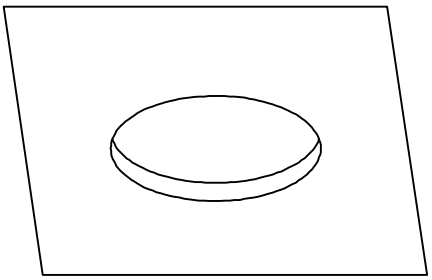
⊙ Normal Close Output Voltage is high state when sensor is not activated.

Pin No	Switch State	Sensor Type
ST1 (Pin 4)	ON	Sensor 1 : Normal Close Type
	OFF	Sensor 1 : Normal Open Type
ST2 (Pin 5)	ON	Sensor 2 : Normal Close Type
	OFF	Sensor 2 : Normal Open Type
ST3 (Pin 6)	ON	Sensor 3 : Normal Close Type
	OFF	Sensor 3 : Normal Open Type
ST4 (Pin 7)	ON	Sensor 4 : Normal Close Type
	OFF	Sensor 4 : Normal Open Type

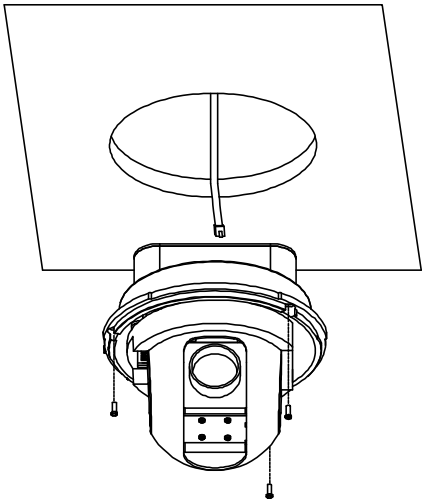
- If sensor type is not selected properly, the alarm can be activated reversely.

2.2 In-Ceiling Mount Installation (4 305 21 Model)

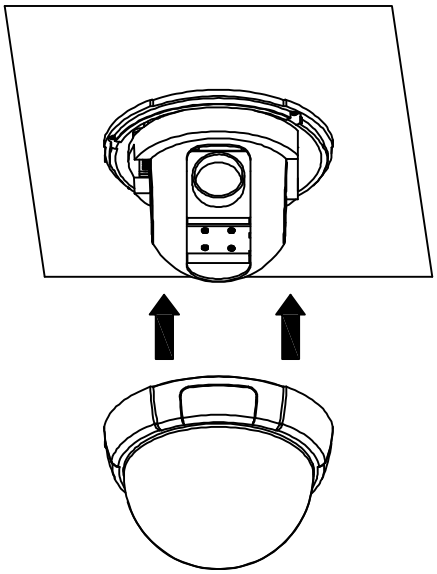
① Remove the ceiling tile from the ceiling and cut a hole whose diameter is 110mm on the ceiling tile to pass the wires and cables through to the upside of ceiling.



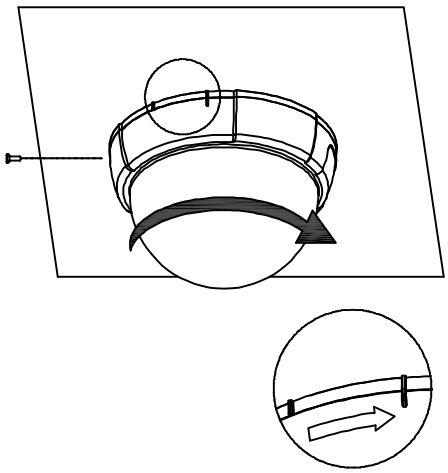
② Connect the wiring and cabling and attach the camera to the ceiling tile. (Tapping M4×16).



③ Align the dome cover stud with the dome cover assembly stud and slightly push the dome cover to the ceiling tile.



④ Turn the dome cover clockwise and screw on the dome cover lock-up screw. Then remove the protection vinyl from the dome cover. (Machine M3×6)

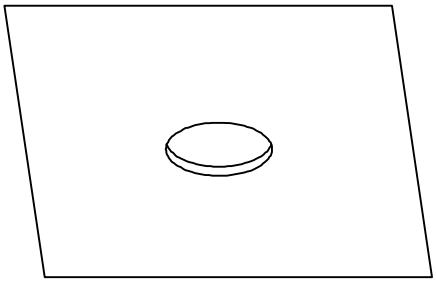


Important Notice

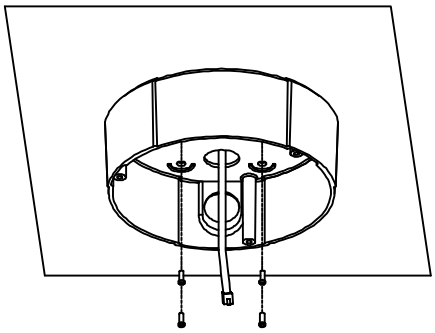
Before starting the installation, make sure that the Camera ID and Protocol are set up properly.

2.3 Installation with Surface Mount Bracket (4 305 21 Model)

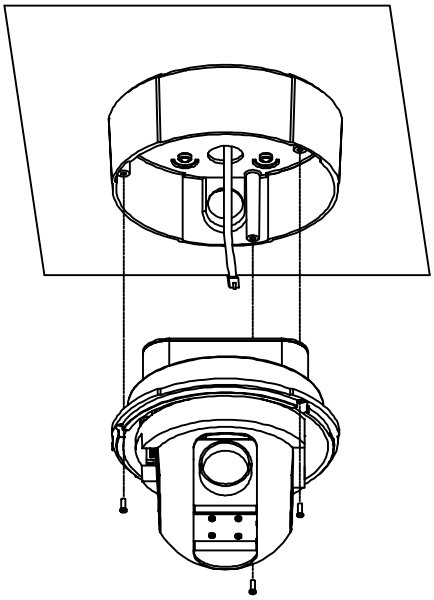
① Remove the ceiling tile from the ceiling and cut a hole whose diameter is 30~40mm on the ceiling tile to pass the wires and cables through to the upside of the ceiling. (In case of wiring and cabling through the ceiling tile only)



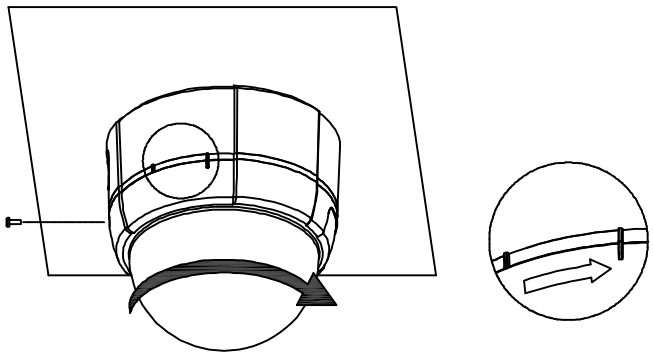
② Prepare the surface mount bracket. Pull the wires and cables for the system as below. Attach the surface mount bracket to the mounting surface. (Tapping M4×25)



③ Connect the wires and cables to the ports and install the main body. (Machine M3×8)



④ Align the dome cover stud with the dome cover assembly stud and slightly push the dome cover to the ceiling. Turn the dome cover clockwise and screw on the dome cover lock-up screw. Then remove the protection vinyl from the dome cover. (Machine M3×6)



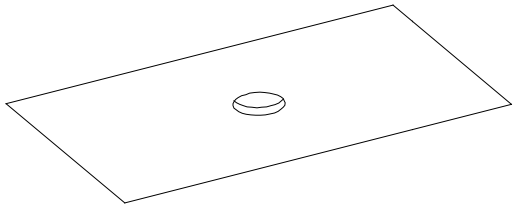
Important Notice

Before starting the installation, make sure that the Camera ID and Protocol are set up properly.

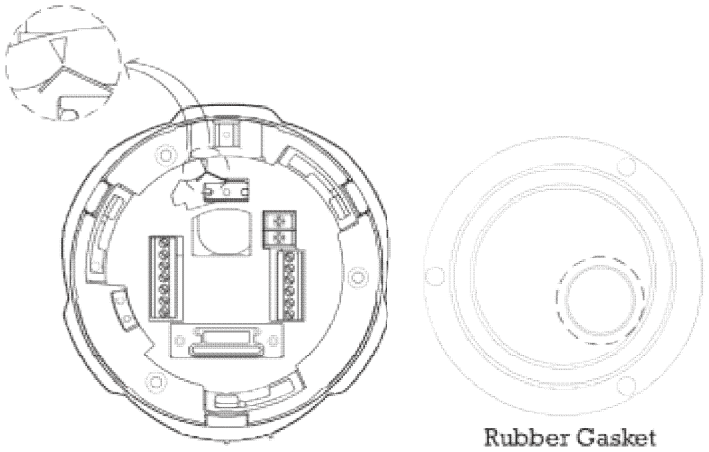
When the pipe hole for wiring and cabling on side of the Surface Mount Bracket is not used, make sure that the hole is properly sealed with the supplied Hole Plug.

2.4 Direct Installation on the Ceiling (4 305 22 model)

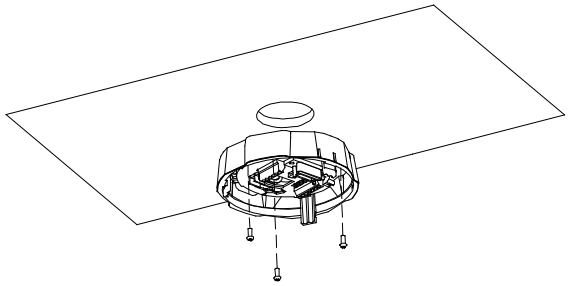
① To pass cables to upside of ceiling, please, make about 50~60mm hole on the ceiling panel.



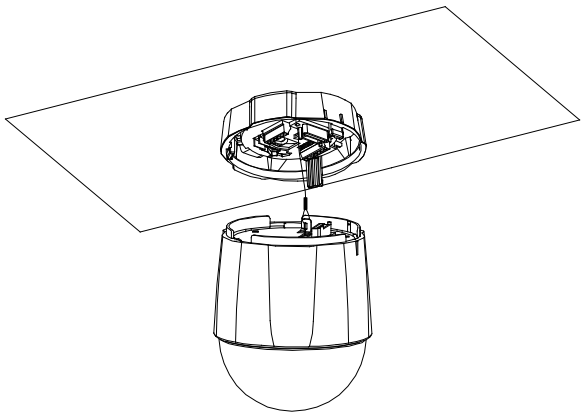
② For cable connection, remove the pre-defined hole mark on the Rubber Gasket and locate the summit of the Plate Spring at the arrow mark as shown in the dotted circle.



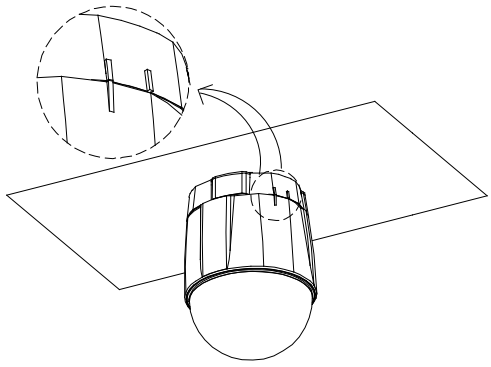
③ After assembling the Rubber Gasket to the Terminal Cover, install Terminal Cover on ceiling tex and connect cables to terminal blocks.



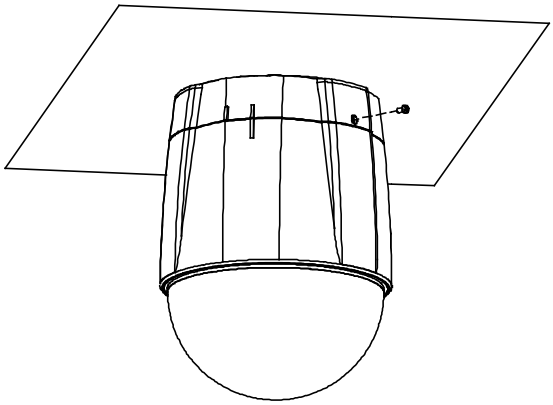
④ Connect the “Drop Prevention Spring” to the main body to prevent camera from drop.



⑤ Check the 2 mold line for assembly before starting assembly. Line up the mold lines as shown in the dotted circle and turn main body on its axis in CW(Clock-Wise) direction and assemble main body to Terminal Cover.

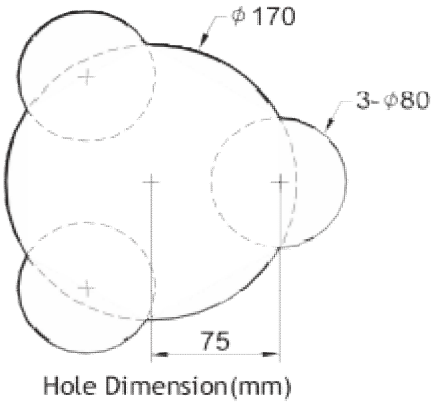


⑥ Tighten the Lockup Screw as shown bellow.

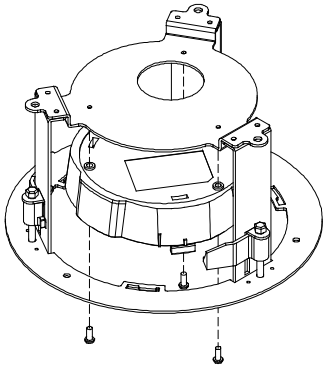


2.5 Installation using In-Ceiling Mount Bracket (4 305 22 model)

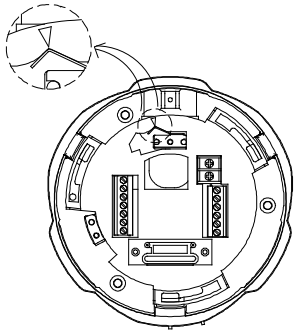
① Cut the panel of ceiling as shown bellow.



② Assemble Terminal Cover of camera to the In-Ceiling Mount Bracket as shown bellow.

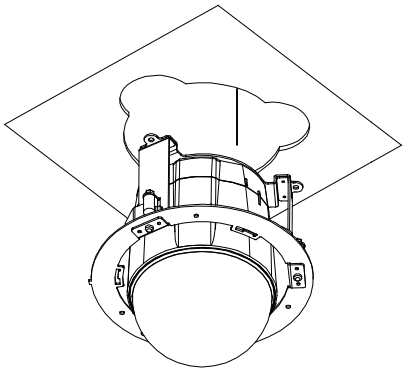


③ Locate the summit of the plate spring at the arrow mark as shown in the dotted circle.

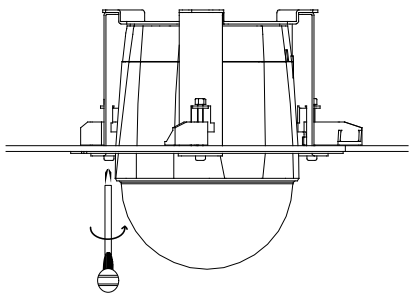


④ Assemble main body to Terminal Cover and insert the assembly into ceiling tex.

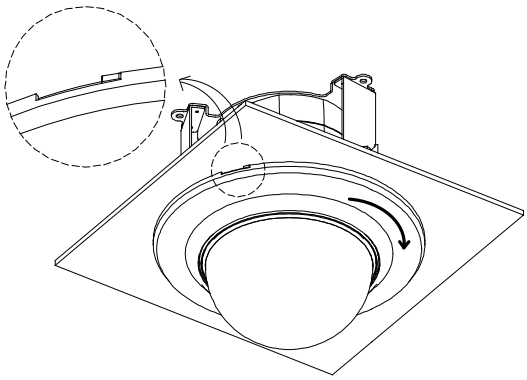
Holes are to be used to sustain the device.



⑤ Screw camera to ceiling tex with 3 screws tightly.

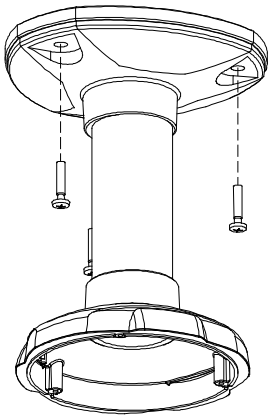


⑥ Assemble Deco. Ring with camera and turn Deco. Ring on its axis in CW(Clockwise) direction.



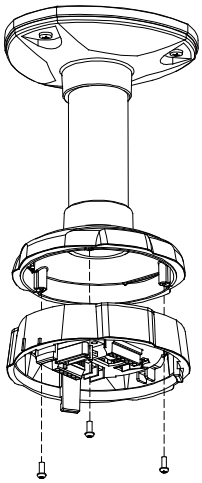
2.6 Installation using Ceiling Mount Bracket (4 305 22 model)

① To pass cables to upside of ceiling, please make about 50~60mm hole on the ceiling panel and attach the Ceiling mount bracket on it.

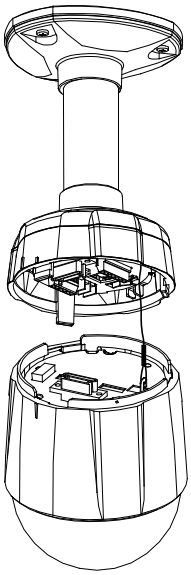


② Assemble Terminal Cover to Ceiling Mount Bracket with 3 screws. (**Do not use Rubber Gasket !**)

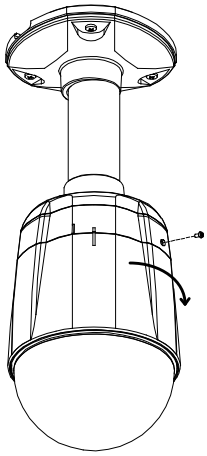
Locate the summit of the Plate Spring at the arrow mark. (For more information, refer to the "Terminal Cover Assembling" section)



③ Connect "Drop Prevention Spring" to main body to prevent camera from drop. Line up the mold lines and turn main body on its axis in CW(Clockwise) direction and assemble main body to Terminal Cover.

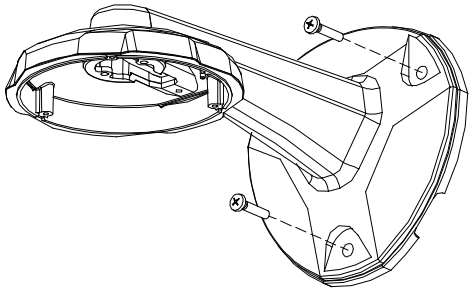


④ After assembling them, screw main body to Terminal Cover to protect them from separation by vibration and so on.



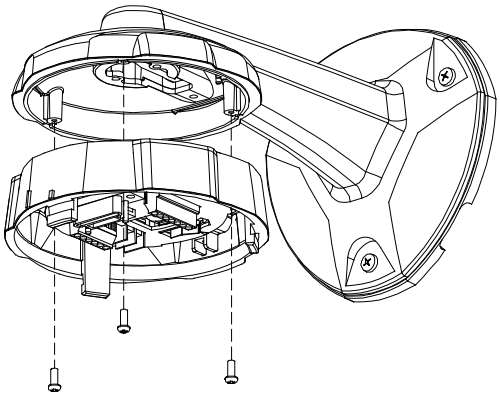
2.7 Installation using Wall Mount Bracket (4 305 22 model)

① Install Wall Mount Bracket on wall.

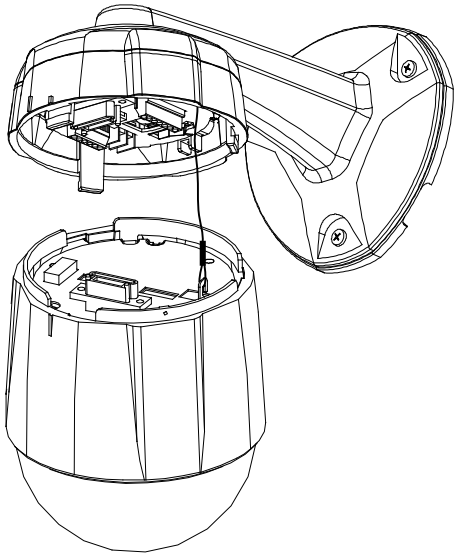


② Assemble Terminal Cover to Wall Mount Bracket with 3 screws. (**Do not use Rubber Gasket !)**

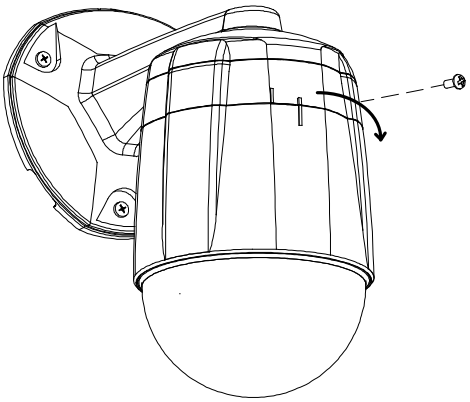
Locate the summit of the Plate Spring at the arrow mark. (For more information, refer to the "Terminal Cover Assembling" section)



③ Connect "Drop Prevention Spring" to main body to prevent camera from drop. Line up the mold lines and turn main body on its axis in CW(Clockwise) direction and assemble main body to Terminal Cover.

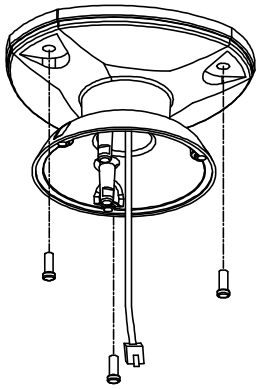


④ After assembling them, screw main body to Terminal Cover to protect them from separation by vibration and so on.

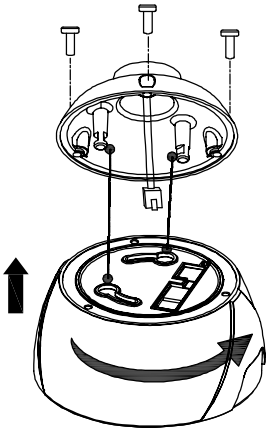


2.8 Installation with Ceiling Mount Bracket (4 305 23/4 305 24/4 305 25 Models)

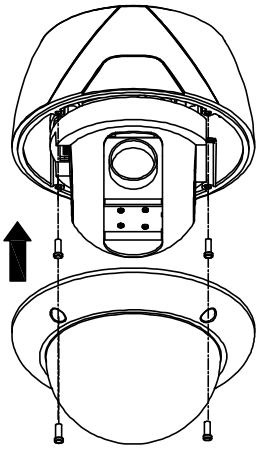
① Remove the ceiling tile from the ceiling and cut a hole whose diameter is 30~40mm on the ceiling tile to pass the wire(s) and cable(s) through to the upside of the ceiling. (In case of the wiring and cabling through the mounting surface only) Then prepare the ceiling mount bracket. Pull the wire(s) for the system as below. (Anchor Bolt 3/8"×70)



② Pull the wire(s) and cable(s) for the system as below. Wire the cable(s) to the ports. Insert the mounting hooks into the holes on the surface of the main body and turn the main body. Assemble the main both with the camera mount adaptor with the 3 screws. (Machine M5×15)



③ Screw the dome cover to the main body and remove the protection vinyl from the dome cover.



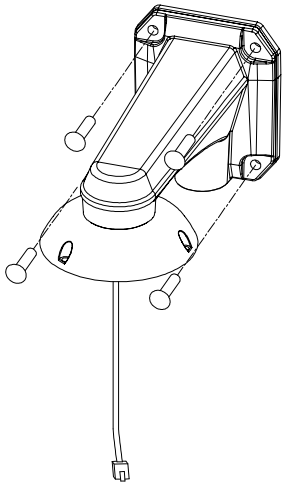
Important Notice

Before starting the installation, make sure that the Camera ID and Protocol are set up properly.

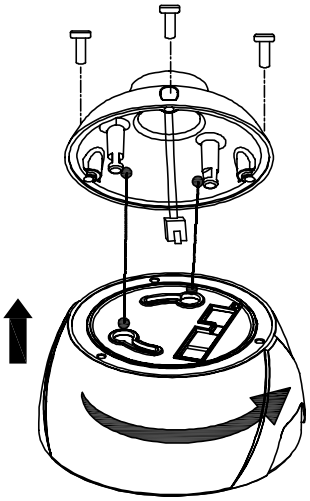
To adjust the installation height from the mounting surface, the pipe and coupler should be needed between the surface mount part of the ceiling mount bracket and the camera mount part of the ceiling mount bracket. Note that they are not supplied by the manufacturer.

2.9 Installation with Wall Mount Bracket (4 305 23/4 305 24/4 305 25 Models)

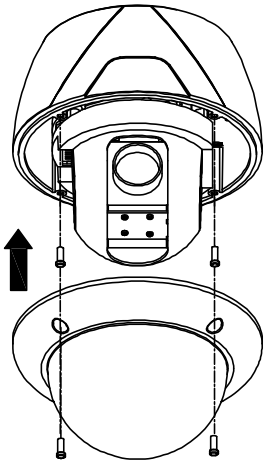
① Make a hole whose diameter is 30~40mm on the mounting surface to pass the wire(s) and cable(s) through the mounting surface. (In case of the wiring and cabling through the mounting surface only) Then prepare the wall mount bracket. Pull the wire(s) and cable(s) for the system as below. Attach the wall mount bracket to the mounting surface. (Hex Lag #14×50)



② Pull the wire(s) and cable(s) for the system as below. Wire the cable(s) to the ports. Insert the mounting hooks into the holes on the surface of the main body and turn the main body. Assemble the main both with the camera mount adaptor with the 3 screws. (Machine M5×15)



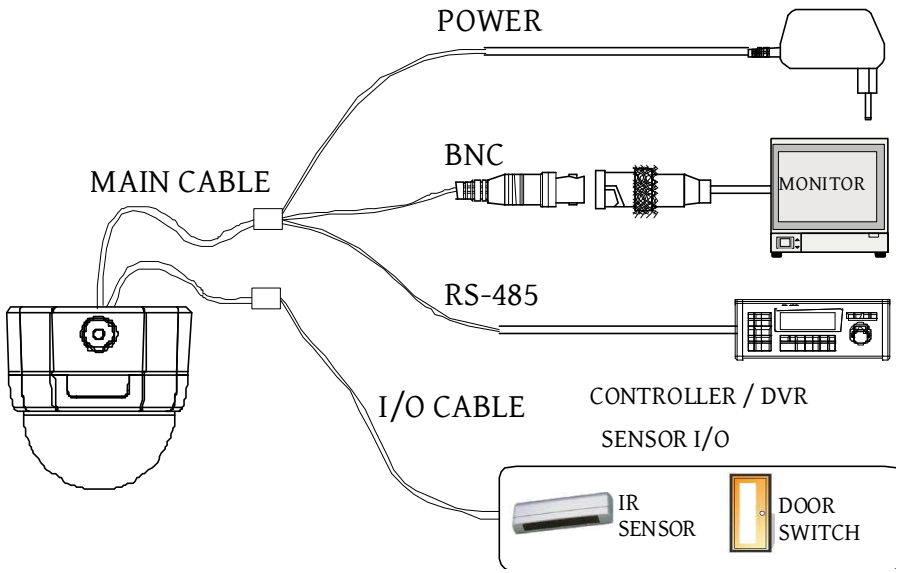
③ Screw the dome cover to the main body and remove the protection vinyl from the dome cover.



Important Notice

Before starting the installation, make sure that the Camera ID and Protocol are set up properly.

2.10 Wiring and Cabling (4 305 21/4 305 23/4 305 24/4 305 25)



Port Description

- Main Cable

Port Pin Number (RJ45)	Connector / Wire Color	Signal
1	BNC Connector	Video +
2,4		Video –
5	Red	RS-485 +
3	Yellow	RS-485 –
7	Orange	Power +
6,8	White	Power –

- I/O Cable

Port Pin Number (RJ25)	Wire Color	Signal
1	Blue	IN COM +
2	Yellow	IN 1 –
3	Green	IN 2 –
4	Red	IN 3 –
5	Black	OUT A
6	White	OUT B

Power Description

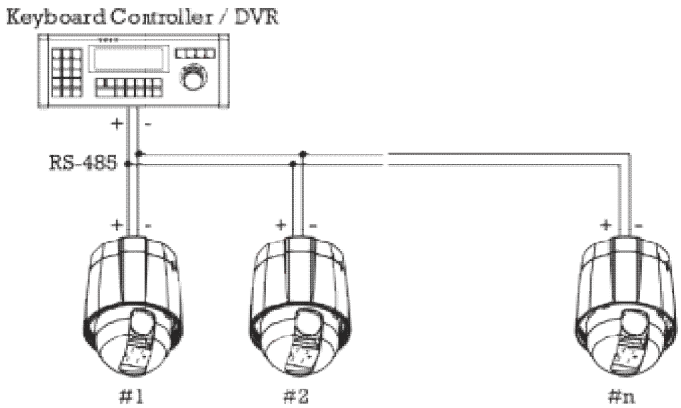
- Carefully check the voltage and current capacity of the rated power. The rated power is indicated in the back of main unit.

Model	Input Voltage Range	Current Consumption
4 305 21	DC 11V ~ 15V	0.8 A
4 305 23/4 305 24/4 305 25		2.5 A

- For the DC input models, be careful with the polarity of DC power. The system should be permanentally damaged by wrong DC input.
- In case that the length of the power wire is very long, there may be voltage drop and the syatem may not work properly. Make the length of the power wire as short as possible.

RS-485 Communication

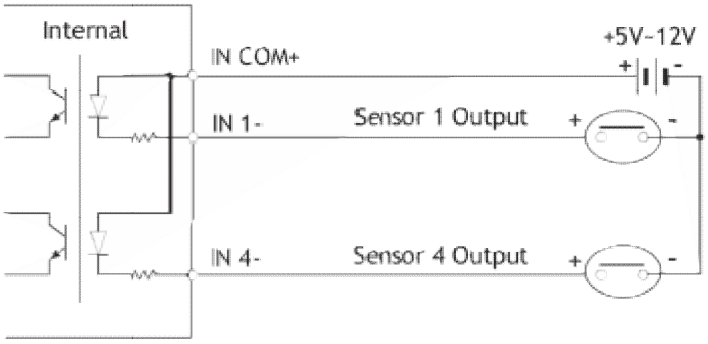
- For PTZ control, connect the cable(s) to your keyboard or DVR. To connect multiple cameras to a single controller, RS-485 communication should be connected in parallel as shown below. If you are connecting a single camera to a controller, terminate the camera. When connecting more than one camera to a single controller, terminate the last camera on the communication line. The last camera means the camera farthest in cable length from the controller. Note that the total length of the communication cable between a controller and the camera(s) on the same communication line must be less than 1.2Km.



Video

- Use BNC coaxial cable only.

Alarm Input



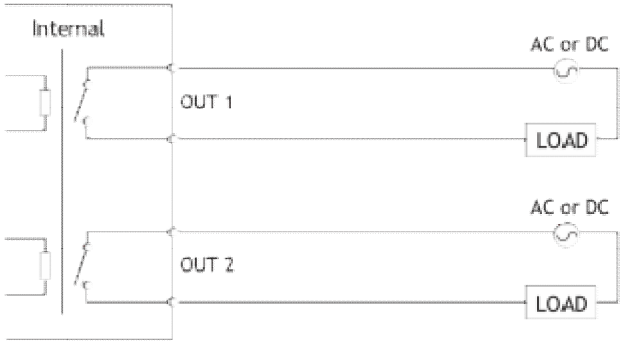
Before connecting sensors, check driving voltages and output signal types of the sensors. Since output signal types of the sensors are divided into Open Collector type and Voltage Output type in general, the wiring must be done properly after considering those types.

Signal	Description
IN COM+	The electric power source to drive input circuit. Connect the (+) wire of electric power source to drive the Sensors to this port as shown in the above circuit.
IN1 -, IN2 -, IN3 -	Connect the outputs of sensors to each port as shown in the above circuit.

If you want to use Alarm Input, the types of sensors must be selected in OSD menu. The sensor types are divided into Normal Open and Normal Close. If wrong sensor types are selected, alarms should be activated reversely to sensor inputs.

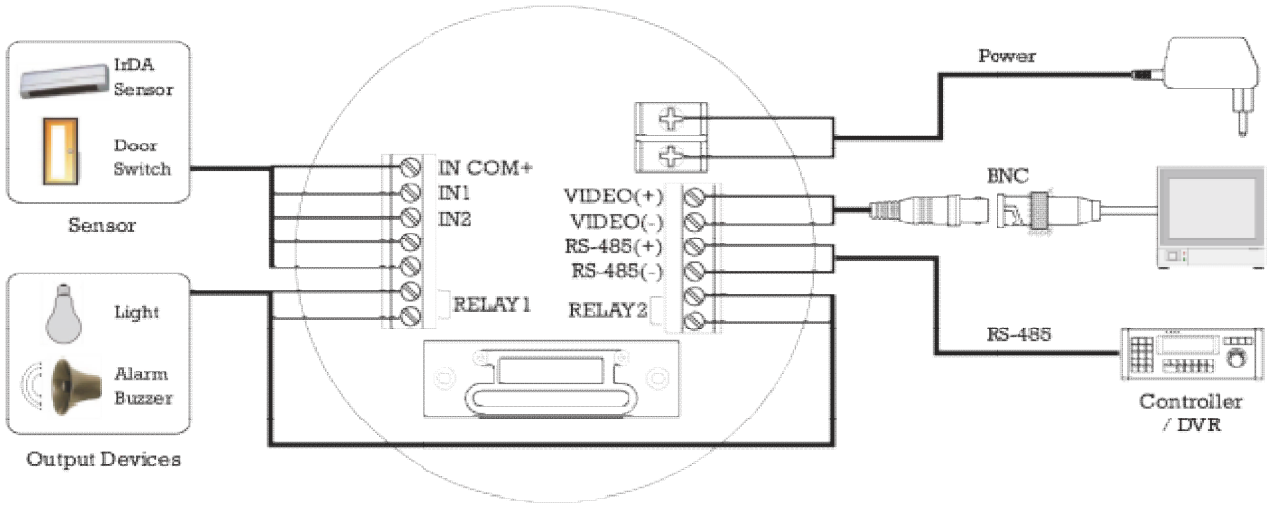
⊙ Normal Open	Output Voltage is high state when sensor is activated
⊙ Normal Close	Output Voltage is high state when sensor is not activated

Relay Output



The maximum loads are as follows: 24 VDC ; 1A.

Wiring and Cabling (4 305 22 model)



Power Connection

- Please, check the voltage and current capacity of rated power carefully. Rated power is indicated in the back of main unit.

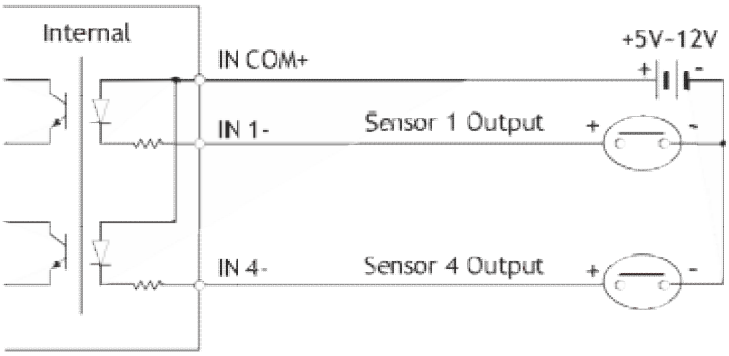
Input Voltage Range	Current Consumption
11-15 VDC	0.75 A

Video Connection

- Connect with BNC coaxial cable.

Alarm I/O Connection

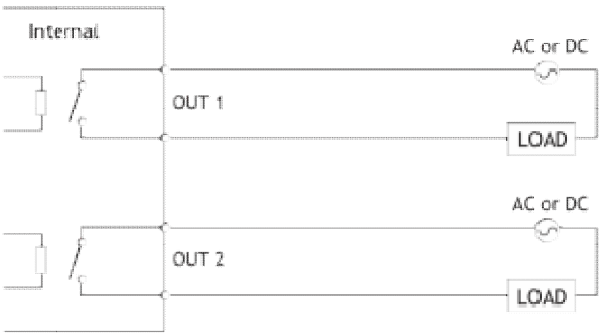
- Sensor Input



Before connecting sensors, check driving voltage and output signal type of the sensor. Since output signal types of the sensors are divided into Open Collector and Voltage Output type in general, the cabling must be done properly after considering these typed. Also, the sensor type, i.e. “Normal Open” or “Normal Close” in Dip switch in main body of camera must be set properly.

Signal	Description
IN COM+	Connect (+) cable of electric power source for Sensors to this port as shown in the circuit above.
IN1–, IN2–, IN3–, In4–	Connect output of sensors for each port as shown in the circuit above.

- Relay Output



Maximum allowable electrical load of relay is shown bellow table.

Drive Power	DC Power	AC 110V Power
Max. Load	DC 28V, 3A	AC110V, 3A

3 Operation

3.1 Check Points before Operation

- Before turning on the system, check if the wire(s) and cable(s) are connected properly.
- Check if the camera ID on the controller is properly selected. The camera ID must be identical to that of the target camera. The camera ID can be checked by reading the DIP switch of the camera or on OSD.
- If your controller supports multi-protocols, the protocol must be changed to match to that of the camera.
- Adjust the DIP switch after turning off the camera. If you changed the camera protocol by changing the DIP S/W, the change will be effective after you reboot the camera.
- Since the operation method can be different by controllers, refer to your controller manual if the camera can not be controlled properly. The operation of this manual is based on the standard Pelco® Controller.

3.2 Check Points for Preset and Pattern Function before Operation

- Check fully how to operate preset function and pattern function with your controller or DVR in advance to operate the camera functions when using a controller or a DVR.
- Refer to the following table when using standard Pelco® protocol controllers.

< Go Preset >	Input [Preset Number] and press [Preset] button shortly.
< Set Preset >	Input [Preset Number] and keep pressing [Preset] button for more than 2 seconds.
< Run Pattern >	Input [Pattern Number] and press [Pattern] button shortly.
< Set Pattern >	Input [Pattern Number] and keep pressing [Pattern] button for more than 2 seconds.

- If your controller or DVR has no pattern button or function, use the Hot Keys with preset numbers. For more information, refer to “Reserved Presets(Hot Keys)” in this manual.

3.3 OSD Menu

- Function: With OSD menu, the system can be properly configured for each application.
- Entering into OSD: Go Preset [95]

3.4 Reserved Presets (Hot Keys)

- Description: Some Preset numbers are reserved to change some parameters without entering into OSD menu.
- Hot Keys:

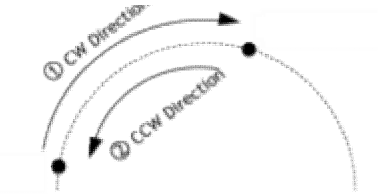
Go Preset [95]	: Entering into OSD menu
Go Preset [131~134]	: Running Pattern Function 1 ~ 4
Go Preset [141~148]	: Running Swing Function 1 ~ 8
Go Preset [151~158]	: Running Group Function 1 ~ 8
Go Preset [161]	: Turning off Relay Output
Set Preset [161]	: Turning on Relay Output
Go Preset [167]	: Setting Zoom Proportional Function to ON
Set Preset [167]	: Setting Zoom Proportional Function to OFF
Go Preset [170]	: Setting Camera BLC Mode to OFF
Go Preset [171]	: Setting Camera BLC Mode to ON
Go Preset [174]	: Setting Camera Focus Mode to AUTO
Go Preset [175]	: Setting Camera Focus Mode to Manual
Go Preset [176]	: Setting Camera Focus Mode to SEMI-AUTO
Go Preset [177]	: Setting Day & Night Mode to AUTO
Go Preset [178]	: Setting Day & Night Mode to NIGHT
Go Preset [179]	: Setting Day & Night Mode to DAY
Go Preset [190]	: Setting OSD Display Mode to AUTO (Except Privacy Mask)
Go Preset [191]	: Setting OSD Display Mode to OFF (Except Privacy Mask)
Go Preset [192]	: Setting OSD Display Mode to ON (Except Privacy Mask)
Go Preset [193]	: Setting all Privacy Mask Display to OFF
Go Preset [194]	: Setting all Privacy Mask Display to ON

3.5 Preset

- Function — MAX. 127 positions are programmable. The Preset number can be assigned from 1 to 128 except 95. Preset 95 is reserved for entering into OSD menu. Camera parameters such as White Balance, Auto Exposure and others can be set up independently and each preset can have its own parameter values independently from the other persets. When setting up presets with a controller, Label should be blank and "Camera Adjust" should be set to "GLOBAL" as the default. To change the parameters, enter into OSD menu.
- Setting Presets — Set Preset [1~128]
- Running Presets — Go Preset [1~128]
- Deleting Presets — To delete Presets, enter into OSD menu.

3.6 Swing

- Function — This function is that the camera moves repetitively between two preset positions at programmed speeds. When a swing function runs, the camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW(Clockwise) direction. Then the camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW(Counterclockwise) direction.



In case that the preset assigned as the 1st point and the preset assigned as the 2nd point are same, the camera turns on its axis by 360° in CW(Clockwise) direction and then it turns back on its axis by 360° in CCW (Counterclockwise) direction. The Swing speed is defined from 1°/sec to 180°/sec.

- Setting Swings — To set Swing, enter into OSD menu.
- Running Swings — Method 1) <Run Pattern> [Swing NO. + 10] ex) Run Swing 3 : <Run Pattern> [13]
  Method 2) <Go Preset> [Swing NO. + 140] ex) Run Swing 3 : <Go Preset> [143]
- Deleting Swings — To delete Swings, enter into OSD menu.

3.7 Pattern

- Function

This function is that the camera memorizes the path (mostly curve path) by the joystick of the controller and revives the trajectory operated by joystick as closely as possible.

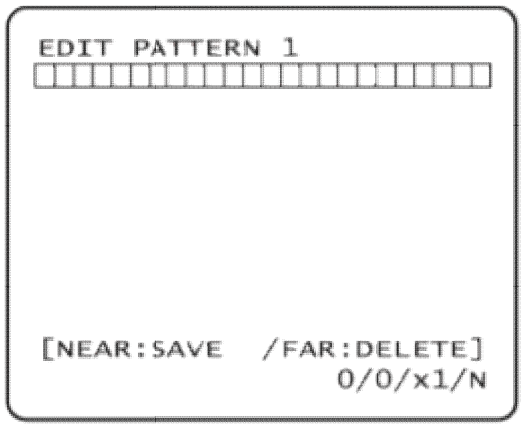
MAX. 4 Patterns are programmable and Maximum 1200 communication commands can be programmed in a pattern.

- Setting Patterns

A Pattern can be created by the following methods.

Method 1) <Set Pattern> [Pattern NO.]

The Pattern programming window appears on the monitor as below.



The movement by Joystick and the preset movement can be memorized in a pattern.

After a pattern is programmed, the remaining storage is displayed in progress bar on the screen.

To save the recording, press **NEAR** key and to cancel, press **FAR** key.

Method 2) Programming in OSD Menu : See the section “How to use OSD Menu”.

- Running Patterns

Method 1) <Run Pattern> [Pattern NO.] Ex: Run Pattern 2 : <Run Pattern> [2]

Method 2) <Go Preset> [Pattern NO. + 130] Ex: Run Pattern 2 : <Go Preset> [132]

- Deleting Patterns

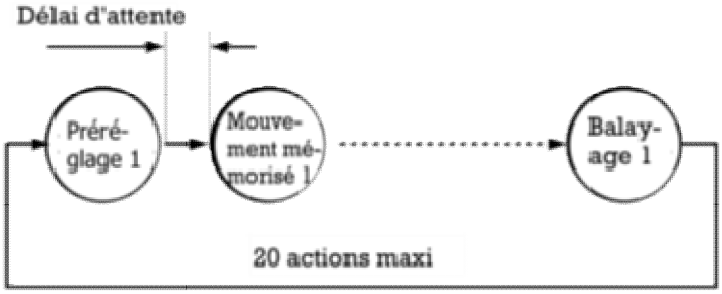
To delete Patterns, enter into OSD menu.

Note: When the system memorizes Patterns, the commands are stored in the momories, not the positions of Pan/Tilt/Zoom. Hence there might be small differences between the original path and the revived path by path type of Patterns. Note that it is not a problem in position precision.

3.8 Group

- Function

This function is that the camera memorizes the combination of Presets, Pattern and/or Swings sequently and runs Presets, Pattern and/or Swings repetitively. MAX. 8 sets of Group are programmable. Each group can have MAX. 20 actions which are the combination of Preset, Pattern and Swing. Preset speed can be set up and the repeat number of Pattern & Swing can be set up in Group setup. Dwell time between actions can be set up also.



- Setting Groups

To set Groups, enter into OSD menu.

- Running Groups

Method 1) <Run Pattern> [Group NO. + 20] ex) Run Group 7 : <Run Pattern> [27]

Method 2) <Go Preset> [Group NO. + 150] ex) Run Group 7 : <Go Preset> [157]

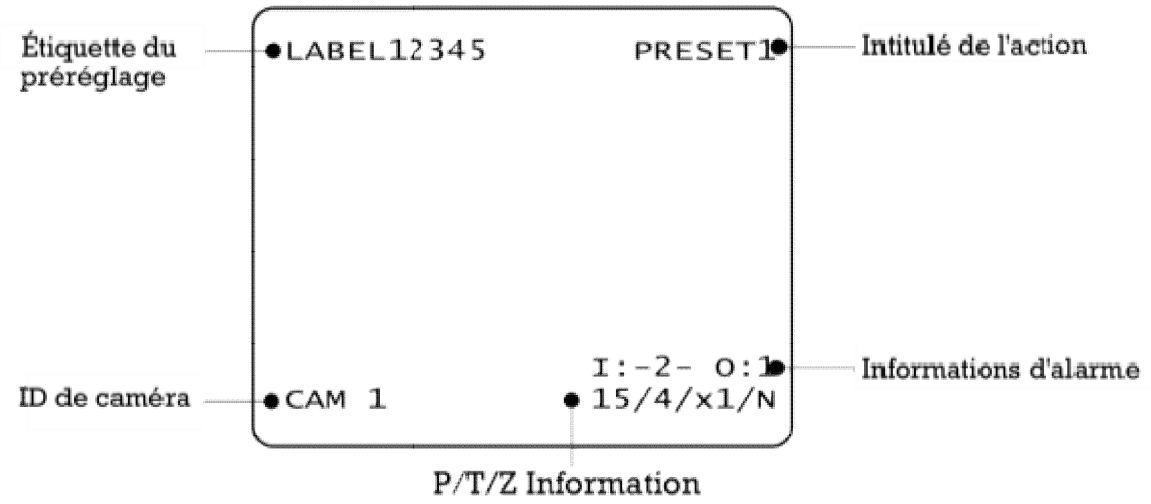
- Deleting Groups

To delete Groups, enter into OSD menu.

3.9 Other Functions

● Power Up Action	This setting defines a specific activity (Preset, Pattern, Swing and Group) to be performed in the event that the power to the camera is cycled. This function enables the user to resume, after turning on power, the last action being executed before turning off the power. Most of actions such as Preset, Pattern, Swing and Group are available for this function but Jog actions are not available to resume.
● Auto Flip	In case that tilt angle arrives at the top of tilt orbit(90°), zoom module camera turns on its axis by 180° at the top of tilt orbit and moves to opposite tilt direction (180°) to keep tracing targets.
● Parking Action	This feature allows the camera to begin a specified operation after a programmed time of inactivity. This function makes the camera automatically run a pre-defined action if there is no command from controller for a pre-defined time period. “Wait Time” means how long a camera should wait for from the previous-last (most recent) command before running the pre-defined action. It can be set to 1 second ~ 3 hours.
● Alarm Input	3 Alarm Inputs are available. When external sensors activate, the camera runs pre-defined actions such as Preset, Pattern, Swing and Group. After the pre-defined time period passed, “Post Alarm” activates, which is pre-defined. Note that only the latest alarm input is effective when multiple sensors are activated at the same time.
● Privacy Zone Mask	Privacy Zone Mask allows the user to program 8 rectangulars that can not be viewed by the operator of the system. To protect others’ privacy, MAX. 8 Privacy Masks can be created on the arbitrary position to hide objects such as windows, shops or private house. With the Spherical Coordinates system, powerful Privacy Zone Mask function is possible. A mask area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.
● GLOBAL/LOCAL Image Setup	WB(White Balance) and AE(Auto Exposure) can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode is that WB and/or AE are/is set up totally and simultaneously for all presets. The Global parameter setup such as WB and AE can be done in "ZOOM CAMERA SETUP" menu. The Local mode is that WB and/or AE are/is set up independently or separately for each preset. The Local parameter setup for WB and AE can be done in each preset setup menu. Each Local parameter such as WB and AE activates correspondingly when the camera arrives at each preset position. During jog operation, Global WB/AE value should be applied. All Local WB/AE values do not change although Global WB/AE value changes. The Local mode has the prior to the Global mode.
● Semi-Auto Focus	This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation. With Manual mode at presets, Focus data is memorized in each preset in advance and the camera calls focus data in correspondence with presets as soon as the camera arrives at presets. It should shorten time to get focuses. The focus mode automatically changes to Auto Focus mode when jog operation starts.

3.10 OSD Display

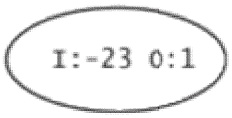


- P/T/Z Information — Displays the amount of pan from zero degree vertical, the amount of tilt from zero degree horizontal and current compass direction. Also identifies the amount of the zoom magnification.
- Camera ID — Displays the selected Camera ID (Address).
- Action Title — Identfies Actions

"SET PRESET xxx"	When Preset xxx is memorized.
"PRESET xxx"	When the camera reaches Preset xxx.
"PATTERN x"	When Pattern x is in action.
"SWG×/PRESET xxx"	When Swing x is in action. Displays both of Swing number and Preset number.
"UNDEFINED"	When a undefined function is called to run

- Preset Label — Displays preset labels when the camera arrives at presets.
- Alarm Information — Displays activated alarms. This information shows current state of Alarm Inputs and Relay Outputs. If an Input point is **ON** state, it will show a number corresponding to each point. If an Input point is **OFF** state, **'-'** will be displayed.

  Example: The point 2 & 3 of inputs are **ON** and Output is **ON**, OSD will show as below.

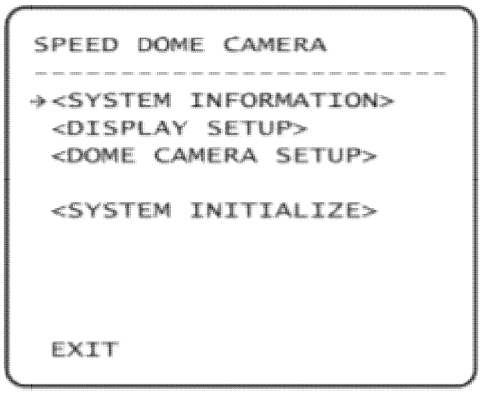


4 OSD MENU

4.1 Quick Programming Guide

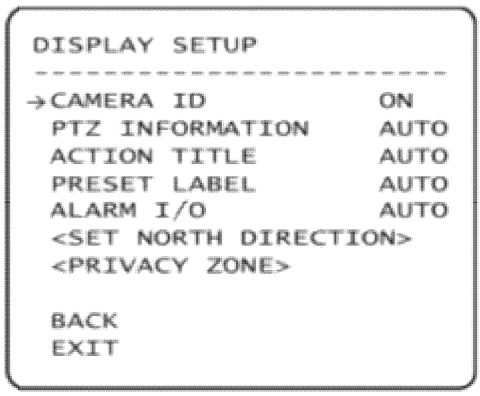
- The menu items with < > always have sub-menus.
- To go to submenus or make the cursor move to the right, press **NEAR** key.
- To go to the previous-upper level menus, press **FAR** key.
- To make a selection, press **NEAR** key
- To cancel a selection, press **FAR** key
- To move the cursor in the menu, use the joystick to the **Up/Down** direction or **Left/Right** direction.
- To change a value of an item, use **Up/Down** of the joystick in the controller.
- To save changes, press **NEAR** key.
- To cancel changes, press **FAR** key.

4.2 Main Menu



● System Information	Displays the system information and configuration. The system setting can not be changed using the OSD menu and the information is for reference only.
● Display Setup	Enables the user to program how labels are displayed on the monitor.
● Dome Camera Setup	Enables the user to configure various functions of the camera.
● System Initialize	Initializes all system configurations and all data to the factory default parameters.

4.3 Display setup



Display setup allows you to program how labels are displayed on the monitor. In case of AUTO, the labels are displayed on the monitor when there are any changes in parameters.

- Camera ID [ON/OFF]

  Displays the selected Camera ID (Address).

- PTZ Information [ON/OFF/AUTO]

  Displays the amount of pan from zero degree vertical, the amount of tilt from zero degree horizontal and current compass direction. Also identifies the amount of the zoom magnification.

- Action Title [ON/OFF/AUTO]

  Identfies Actions.

  "SET PRESET xxx"

  "PRESET xxx"

  "PATTERN x"

  "SWG/PRESET xxx"

  "UNDEFINED"

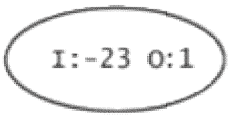
- Preset Label [ON/OFF/AUTO]

  Displays the preset labels when the camera arrives at presets.

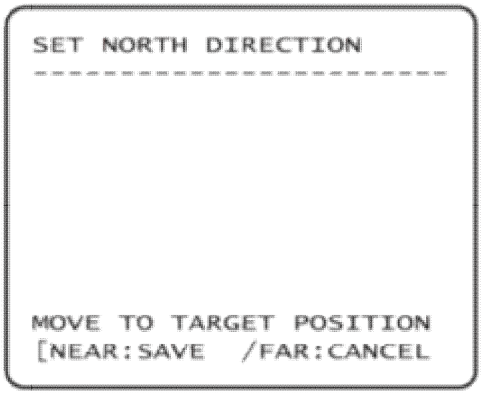
- Alarm I/O [ON/OFF/AUTO]

  Displays the activated alarms. This information shows the current state of Alarm Inputs and Relay Outputs. If an Input point is **ON** state, it will show a number corresponding to each point. If an Input point is **OFF** state, **'-'** will be displayed.

  Example: The point 2 & 3 of inputs are **ON** and Output is **ON**, OSD will show as below.

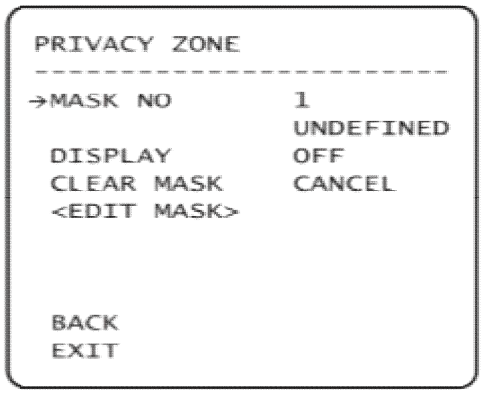
  

Compass Direction setup



Move the camera to a target position and press **NEAR** button to save the direction as North. The direction is the reference direction to assign other compass directions

4.4 Privacy Zone Mask Setup



Privacy Zone Mask allows the user to program 4 rectangulars that can not be viewed by the operator of the system. To protect privacy, MAX. 4 Privacy Masks can be created on the arbitrary position to hide objects such as windows, shops or private house. With the Spherical Coordinates system, powerful Privacy Zone Mask function is possible. A mask area will move with pan and tilt functions and automatically adjust in size as the lens zooms telephoto and wide.

- Mask NO [1~8]

  Selects a Mask number to program. If the selected mask has already data, the camera moves as it was programmed. Otherwise, "UNDEFINED" will be displayed under the Mask number.

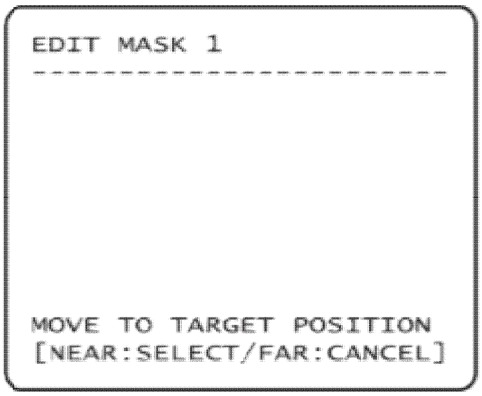
- Display [ON/OFF]

  Sets if the mask of the selected mask number shows or not on the screen.

- Clear Mask [CANCEL/OK]

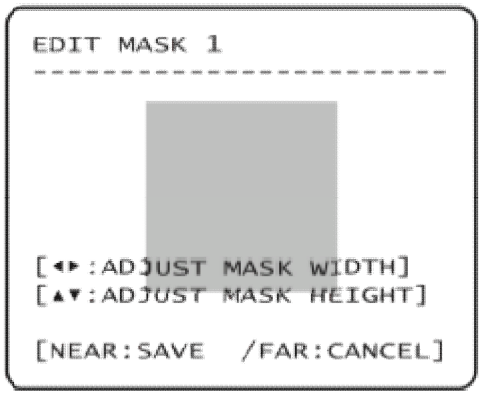
  Deletes the mask data of the selected mask number.

Privacy Zone Mask Area Setup



Move your camera to an area to mask. Then a mask and the menu to adjust the mask size will be displayed.

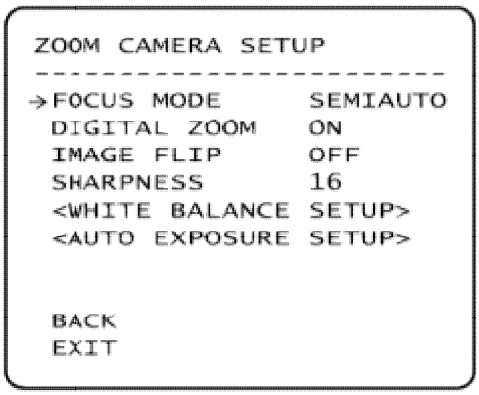
Privacy Zone Mask Size Setup



Adjusts the mask size. Use the joystick or the arrow buttons of your controller to adjust mask size.

- ◄ ► (Left/Right) Adjusts the mask width.
- ▲ ▼ (Up/Down) Adjusts the mask height.

4.5 Camera Setup (Dome Camera Setup Menu)



Sets the general functions of zoom camera module.

- Focus Mode [AUTO/MANUAL/SEMIAUTO]

  Sets camera Focus mode.

  ○ SEMIAUTO Mode

  This mode automatically exchanges focus modes between Manual Focus mode and Auto Focus mode by operation. Manual Focus mode activates in preset operation and Auto Focus mode activates during jog operation. With Manual mode at presets, Focus data is memorized in each preset in advance and the camera calls focus data in correspondence with presets as soon as camera arrives at presets. It should shorten time to get focuses. Focus mode automatically changes to Auto Focus mode when jog operation starts.

- Digital Zoom [ON/OFF]

  Sets the digital zoom functions to ON/OFF. If this is set to OFF, the optical zoom function runs but the zoom function stops at the end of optical zoom magnification.

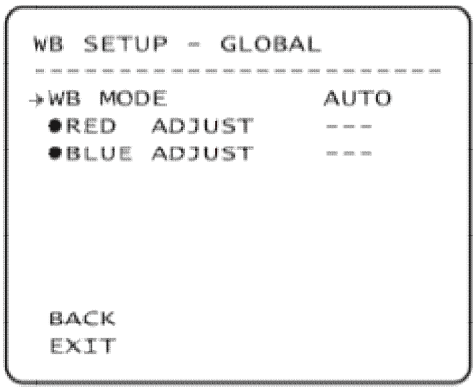
- Image Flip [ON/OFF]

  Sets System Image Flip Function to ON/OFF. When this function is set to ON, flipped images always come out. When the camera is installed as Desktop type, set to ON to get proper images.

- Sharpness [0~3]

  Sets image sharpness to enhance pictures.

White Balance Setup



- WB Mode [AUTO/MANUAL]

  Retains color balance over a color temperature range. In auto mode, this feature automatically processes the viewed image. In Manual mode, Red and Blue level can be set up manually.

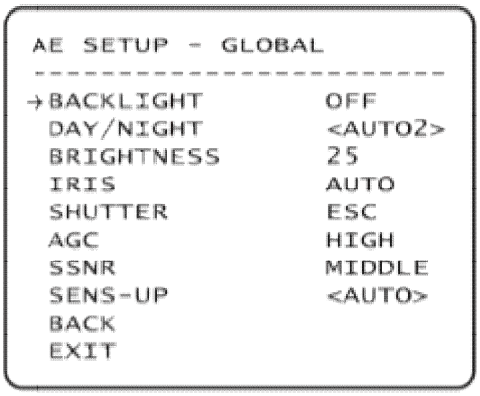
- Red Adjust [10~255]

  Adjusts the picture output in the red range.

- Blue Adjust [10~255]

  Adjusts the picture output in the blue range.

Auto Exposure Setup



- Backlight [ON/OFF]

  Sets Backlight Compensation to ON/OFF. If a bright backlight is present, the subjects in the picture may appear dark or as a silhouette. Backlight compensation enhances objects in the center of the picture. The camera uses the center of the picture to adjust the iris. If there is a bright light source outside of this area, it will wash out to white. The camera will adjust the iris so that the object in the sensitive area is properly exposed.

- Day/Night [AUTO//DAY/NIGHT]

  Sets Day&Night mode. You can increase sensitivity in low light conditions by switching to black-white mode (removing the IR cut filter or turning on DSS). Color mode is preferred in normal lighting conditions. The time to change a mode is 10 sec.

  . If this is set to DAY mode, ACG is fixed to HIGH.

- Brightness [0~64]

  Adjusts the brightness of the images. Iris, The Shutter Speed and Gain are adjusted automatically in correspondence with each numeric value.

- IRIS [AUTO/MANUAL(0~64)]

  Sets Iris to operate automatically or at a user-defined level. If Iris is set to Auto, Iris has higher priority in adjusting AE and Shutter Speed is fixed. Auto iris is the lens function that automatically opens closes the iris in response to changing light conditions.

  If Iris is set to Manual, Iris is fixed and Iris has lower priority in adjusting AE, in comparison with others. The Iris level range is 0 ~ 100.

- Shutter Speed [A.Flicker/Manual(1/60(50) ~ 1/10000 sec)]

  Sets Shutter Speed. Shutter Speed is the duration of the electronic shutter. If Iris is set to Manual and Shutter Speed is set to ESC, Shutter Speed has higher priority. If Shutter Speed is set to A.Flicker, to remove Flicker, Shutter Speed should be set to 1/100 sec. for NTSC and 1/120 for PAL.

- AGC [OFF/LOW/HIGH]

  Sets AGC. This setting enhances image brightness automatically in case that luminance level of image signal is too low.

- SSNR [OFF/LOW/MIDDLE/HIGH]

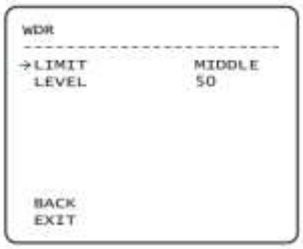
  Sets SSNR. This setting enhances the images by deducting noises when the gain level of the mages is too high.

- SENS-UP [AUTO(2~256)/OFF]

  Sets SENS-UP. This setting activates Slow Shutter function when luminance of image (signal) is too dark.

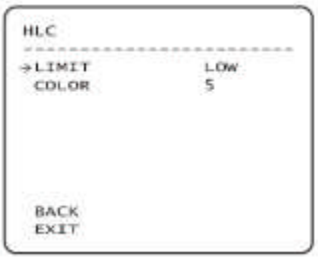
  It is possible to set up the maximum number of frames piled up one on another by Slow Shutter function.

(Wide Dynamic Range) Setup



- Limit [LOW/MIDDLE/HIGH]
- Level [0~100]

HLC (High Light Compensation) Setup



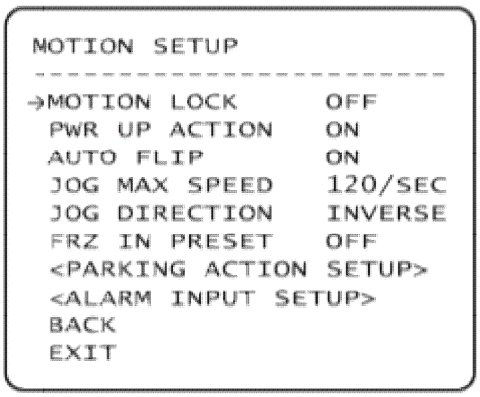
- Limit [AUTO/MANUAL]

  When there are too bright lights, this function blocks light sources on the images to have better images. For example, when there is a car coming to a camera at night, this function bocks car headlights to recognize its number plate.

- Level [0~10]

  Assigns colors of masks to block light sources

4.6 Motion Setup



Sets the general functions of Pan/Tilt motions.

- Motion Lock [ON/OFF]

  If Motion Lock is set to ON, it is impossible to set up and delete Preset, Swing, Pattern and Group. It is possible only to run those functions. To set up and delete those functions, enter into OSD menu.

- Power Up Action [ON/OFF]

  Refer to “Other Functions" section.

- Auto Flip [ON/OFF]

  Refer to “Other Functions" section.

- Jog Max Speed [1°/sec ~360°/sec]

  Sets the maximum jog speed. Jog speed is inversely proportional to the zoom magnifications. As the zoom magnification goes up, the pan/tilt speed goes down.

- Jog Direction [INVERSE/NORMAL]

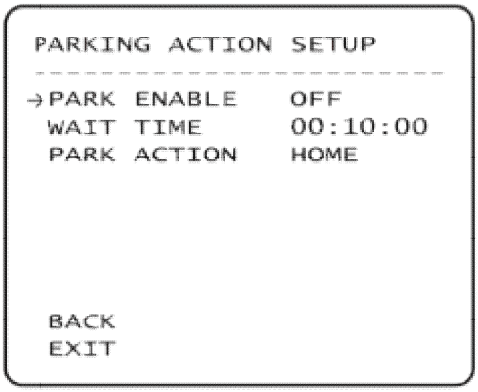
  Sets the Jog Direction. If this is set to ‘Inverse’, the view direction in the screen is same as the direction of joystick. If this is set to ‘Normal’, the view direction in the screen is the reverse dirction of joystick.

- Freeze in Preset [ON/OFF]

  Sets Frame Freeze Function. This feature freezes the scene on the monitor when going to a preset. At the start point of a preset movement, a camera starts freezing the image of the start point. Camera keeps displaying the image of the start point during preset movement and does not display the images which camera gets during preset movement. As soon as camera stops at preset end point, camera starts displaying live images which it gets at the end preset point. This feature also reduces bandwidth when working with digital systems or digital network systems.

  This function availability should be different by models.

Parking Action Setup



This feature allows the camera to begin a specified action after a programmed time of inactivity.

- Park Enable [ON/OFF]

  If Park Enable is set to ON, the camera runs an assigned function automatically if there is no PTZ command during the programmed "Wait Time".

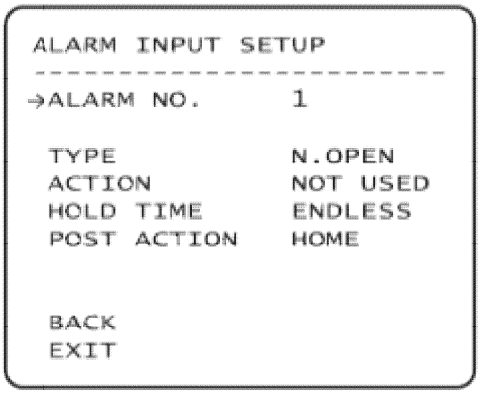
- Wait Time [1~59 sec. / 1~180 min.]

  Wait Time can be programmed from 1 second to 180 minutes.

- Park Action [HOME/PRESET/PATTERN/SWING/GROUP/PREV ACTION]

  This feature defines the activity when the camera parks. If Park Action is set to “HOME”, the camera moves to the home position which is memorized when the system boots. If Park Action is set to “PREV. ACTION”, the camera runs the previous action which it ran most recently.

Alarm Input Setup



Defines Alarm Function. When an alarm is receive, an input signal to the camera triggers the user-defined action programmed for the alarm.

- Alarm No [1~3]

  Selects a sensor number to set up.

- Type [Normal OPEN/Normal CLOSE]

  Selects sensor operation type.

- Action [NOT USED/PRESET/PATTERN/SWING/GROUP]

  Selects an action to run when a sensor signal is input.

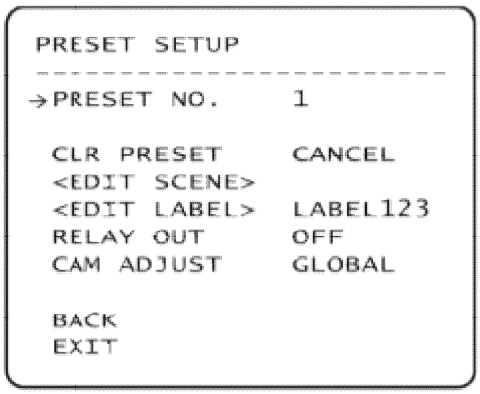
- Hold Time [ENDLESS / 1~59 SEC. / 1~180 MIN.]

  Sets the time period for the action which is run by external sensor activation. After the time period passes, the action pre-defined in “Post Action” runs sequentially in succession to the action by external sensor activation. If this option is set to “ENDLESS”, “Post Action” does not activate.

- Post Action [HOME/PRESET/PATTERN/SWING/GROUP/PREV ACTION]

  Selects the action that a camera will run after the time period in“HOLD TIME” passes. If Post Action is set to “PREV. ACTION”, the camera runs the previous action which it ran most recently.

4.7 Preset Setup



- Preset Number [1~128]

  Selects a preset number to set up. If a selected preset is already defined, the camera moves to the pre-defined position and preset parameters such as Label and CAM Adjust show on the monitor. If a selected preset is not defined, “UNDEFINED” shows on the monitor.

- Clear Preset [CANCEL/OK]

  Deletes the data of the selected Preset.

- Edit Preset Scene Re-defines the scene position of the selected Preset.

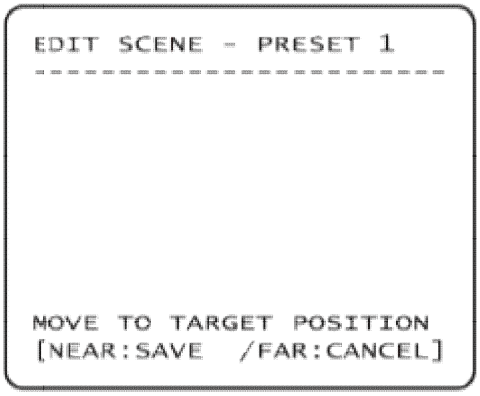
- Edit Preset Label Edits the label of the selected Preset to show on the monitor when the preset runs. MAX. 10 alphanuberic characteristics are allowed.

- Relay Out Defines the relay output.

- CAM Adjust [GLOBAL/LOCAL]

  WB(White Balance) and AE(Auto Exposure) can be set up independently for each preset. There are 2 modes, "Global" mode & "Local" mode. The Global mode is that WB and/or AE are/is set up totally and simultaneously for all presets. The Global parameter setup such as WB and AE can be done in "ZOOM CAMERA SETUP" menu. The Local mode is that WB and/or AE are/is set up independently or separately for each preset. The Local parameter setup for WB and AE can be done in each preset setup menu. Each Local parameter such as WB and AE activates correspondingly when the camera arrives at each preset position. During jog operation, Global WB/AE value should be applied. All Local WB/AE values do not change although Global WB/AE value changes. The Local mode has the prior to the Global mode.

Preset Scene Setup

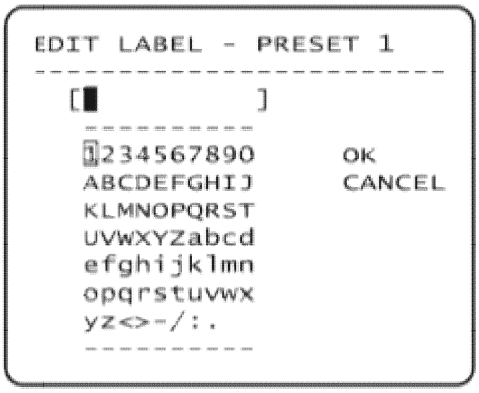


○,1 Use the Joystick to move the camera to a desired position.

○,2 Save the preset position by pressing **NEAR** key.

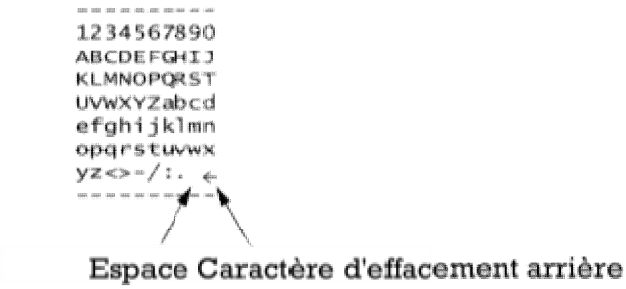
○,3 Press **FAR** key to cancel targeting the preset position.

Preset Label Setup



Edit the label of the selected preset to show on the monitor when camera arrives at the preset. In the Edit Label menu, the dark rectangular is the cursor. As soon as finishing selecting an alphabet or a number, the cursor moves to the next digit.

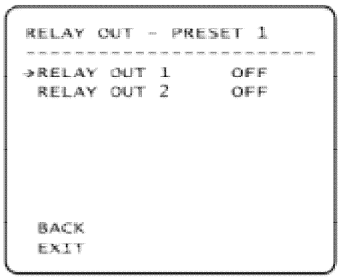
1) With Left/Right/Up/Down of the joystick, move to a desired Alphabet or a desired number in the Alphanumeric set. To select a desired Alphabet or a desired number, press the NEAR key.



If you want to use a blank, select the double quotation mark (" "). If you want to delete an Alphabet or a number, use the back space character (" ←").

2) If you complete the Label editing, move the cursor to "OK" and press the NEAR key to save the completed label. To abort the current change, move the cursor to "Cancel" and press the NEAR key.

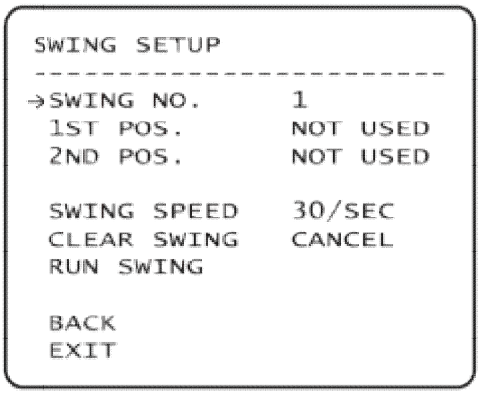
Relay Out Setup (4 305 22)



● Relay Out × [ON/OFF]

Sets Relay Outputs for assigned preset.

4.8 Swing Setup

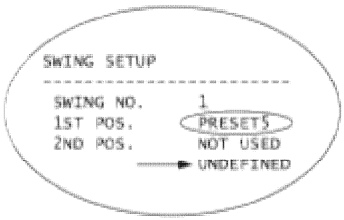


- Swing Number [1~8]

  Selects a Swing number to edit. If the selected Swing is not defined, "NOT USED" is displayed in the 1st Position and the 2nd Position.

- 1st Position
  2nd Position [PRESET 1~128]

  Sets the 2 positions for a Swing function. If the selected preset is not defined, "UNDEFINED" is displayed as shown below.



When a swing function runs, the camera moves from the preset assigned as the 1st point to the preset assigned as the 2nd point in CW(Clockwise) direction. Then the camera moves from the preset assigned as the 2nd point to the preset assigned as the 1st point in CCW (Counterclockwise) direction. In case that the preset assigned as the 1st point and the preset assigned as the 2nd point are same or only 1 Preset position is assigned, the camera turns on its axis by 360° in CW direction and then it turns on its axis by 360° in CCW direction.

- Swing Speed [1°/sec. ~180°/sec.]

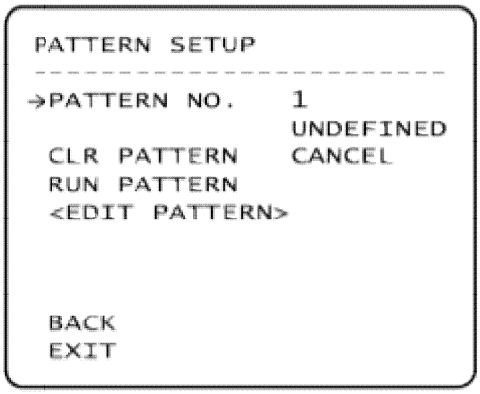
  Defines Swing speed between the 2 Preset positions from 1°/sec to 180°/sec

- Clear Swing [CANCEL/OK]

  Deletes the data of the selected Swing.

- Run Swing Runs Swing for the test purposes to check if it works properly.

4.9 Pattern Setup



- Pattern Number [1~4]

  Selects a Pattern number to edit. If the selected pattern number is not defined, "UNDEFINED" will be displayed under the selected pattern number.

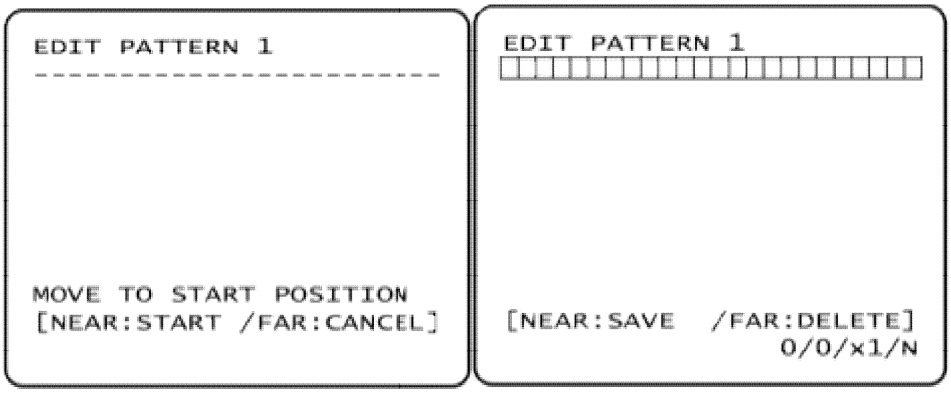
- Clear Pattern [CANCEL/OK]

  Deletes the data of the selected pattern.

- Run Pattern Runs the Pattern for the test purposes to check if it works properly.

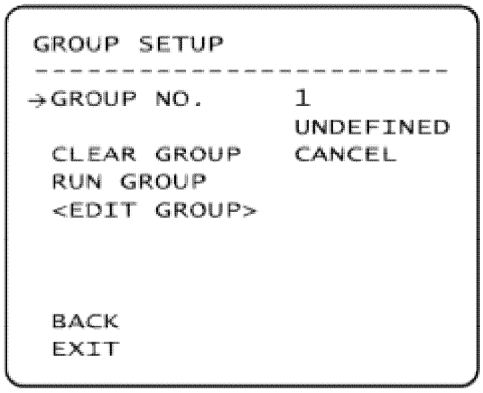
- Edit Pattern Edits the selected pattern.

Pattern Edit



1) With the Joystick of your controller, move the camera to the start position with an appropriate zoom magnafication. To start the pattern recording, press **NEAR** key. To exit, press **FAR** key.
2) Move camera with joystick of controller or run preset function to memorize the path (mostly curve path) in the selected pattern. The movement by Joystick and preset movement will be memorized in a pattern. After a pattern is programmed, the remaining storage is displayed in progress bar on the screen.
3) To save the data and exit, press **NEA**R key. To cancel saving the data and delete the data, press **FAR** key.

4.10 Group Setup



- Group Number [1~8]

  Selects a Group number to edit.

  If the selected Group number is not defined, "UNDEFINED" will be displayed under the selected Group number.

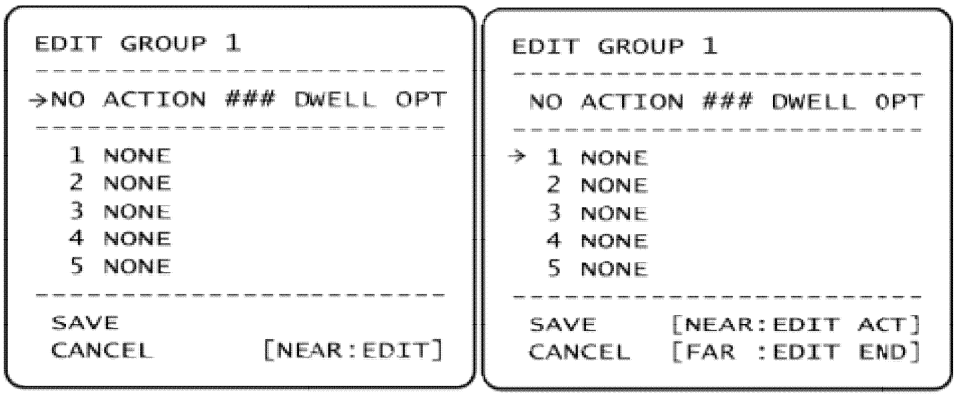
- Clear Group [CANCEL/OK]

  Deletes the data of the selected Group.

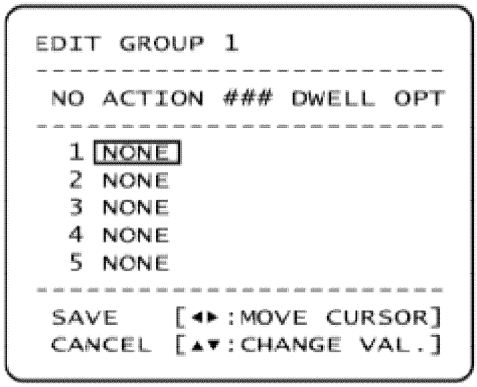
- Run Group Runs the Group for the test purposes to check if it works properly.

- Edit Group Edit the selected Group.

Group Edit



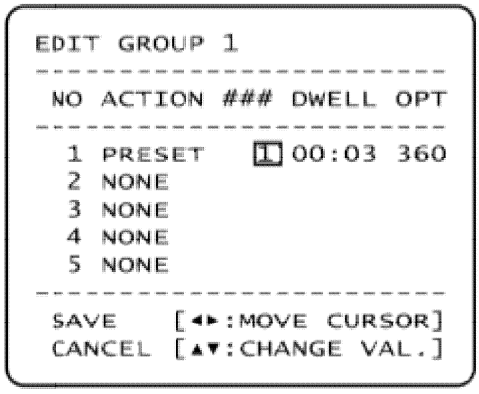
1) Press **Near** key when the cursor is at "NO" to start editing the selected Group.
2) Note that MAX. 20 actions are allowed in a Group. Move the cursor up/down to select an Action. Press **Near** key to edit.



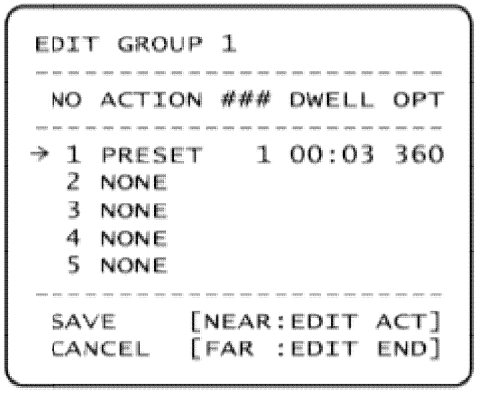
3) Define Action, Dwell time and Option. Note that the dark rectangular is the cursor. Move the cursor **Left**/**Right** to select an item and move cursor **Up**/**Down** to change each parameter.

- Action ### [NONE/PRESET/SWING/PATTERN]
- DWELL [0 SEC. ~ 4 MIN.]

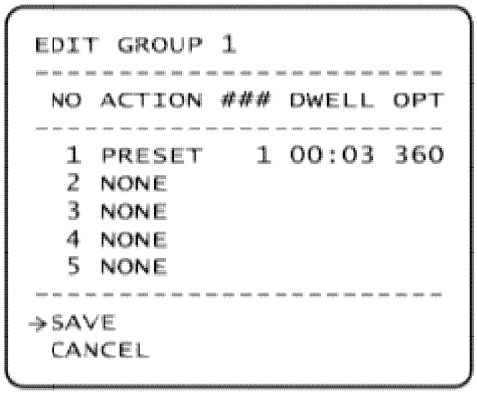
  Sets the Dwell Time between functions.
- OPT Option. It is a preset speed when a preset is selected in the Action. It is the number of repeat when a Pattern or a Swing is selected in the Action.



4) Edit the items such as Action, ###, Dwell and OPT by moving the cursor.

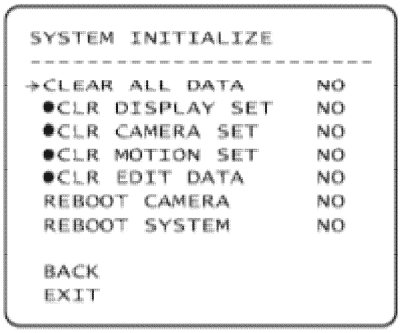


5) After finishing editing a Action, press Near key to go to the previous-upper level menu (Step ②). Move the cursor Up/Down to select an Action number and repeat Step ② ~ Step ④ to keep editing the selected Group.



6) After finishing setting up, press **FAR** key to exit. Then the cursor will move to "SAVE". Press **Near** key to save the data.

4.11 System Initialization



- Clear All Data — Deletes all configuration data and the system is set to the factory default.
- Clear Display Set — Initializes all the configuration data for Display.
- Clear Camera Set — Initializes all the configuration data for Camera.
- Clear Motion Set — Initializes all the configuration data for Motion.
- Clear Edit Data — Deletes all the configuration data for Preset, Swing, Pattern and Group.
- Reboot Camera — Reboots the zoom camera module.
- Reboot System — Reboots the system.

Factory Default

● Display Parameters	
Camera ID	ON
PTZ Information	AUTO
Action Title	AUTO
Preset Label	AUTO
Alarm I/O	AUTO
North Direction	Pan 0°
Privacy Zone	Undefined

● Motion Parameters	
Motion Lock	OFF
Power Up Action	ON
Auto Flip	ON
Jog Max Speed	120°/sec
Jog Direction	INVERSE
Freeze In Preset	OFF
Park Action	OFF
Alarm Action	OFF

● Camera Parameters	
Focus Mode	SemiAuto
Digital Zoom	ON
Image Flip	OFF
Sharpness	2
Stabilization	OFF
White Balance	AUTO
Backlight	OFF
Day&Night	AUTO
Brightness	32
Iris	AUTO
Shutter	-
AGC	-
SSNR	MIDDLE
SENS-UP	AUTO (4 Frame)

● User-Defined Data	
Preset 1~128	Undefined
Swing 1~8	Undefined
Pattern 1~4	Undefined
Group 1~8	Undefined

5 Specifications

CAMERA PART (4 305 21/4 305 23)	
Video Signal Format	PAL
Image Sensor	Sony 1/4" Super HAD CCD
Total Pixels	795(H)×596(V) 470K
Effective Pixels	752(H)×582(V) 440K
Horizontal Resolution	560 TV Lines(Color), 600 TV Lines(B/W)
Video Signal-to-Noise	52 dB (AGC Off)
Zoom	12x Optical Zoom, 12x Digital Zoom
Forcal Length	F1.6 (Wide)/F2.0(Tele), f=3.6~44.3 mm
Angle of View	H : 5444°(Wide)~4.64°(Tele) / V : 41.42°(Wide)~3.52°(Tele)
Minimum Illuminance	2.0 Lux (Color, Sens Off) / 0. 0008 Lux (B/W, Sens x256), 50 IRE, F1.6
Day & Night	Auto / Day / Night(ICR)
Focus	Auto / Manual / SemiAuto
Iris	Auto / Manual
Shutter Speed	1/60(50) ~ 1/10000 sec (x2~ 256 Sens UP)
AGC	Auto / Manual
White Balance	Auto / Manual(Red, Blue Gain Adjustable. 2000°K~10000°K)
BLC	ON/ Off
Flickerless	Selectable
SSNR	Low / Middle / High / Off
Privacy Zone	8 Masks, Spherical Coordinate

Specifications (4 305 22)

Model		4 305 22	
Video Signal System		PAL	
Camera	CCD	1/4" Super HAD color CCD	
	Max. Pixels	795(H)×596(V) 470K	
	Effective Pixels	752(H)×582(V) 440K	
	Horizontal Res.	550 TV Line(Color), 680 TV Line(B/W)	
	S/N Ratio	50 dB (AGC Off)	
	Zoom	27x Optical Zoom, 12x Digital Zoom	
	Focal length	f=3.5~94.5mm (F1.6~2.9)	
	Min. illumination	0.4 Lux/F1.6 (Color), 0. 02 Lux/F1.6 (B/W), 50 IRE	
	Day & Night	Auto / Day / Night(ICR)	
	Focus	Auto / Manual / SemiAuto	
	Iris	Auto / Manual	
	Shutter Speed	x256 ~ 1/120000 sec	
	AGC	Low / Middle / High / Manual / Off	
	White Balance	Auto / Manual(Red, Blue Gain Adjustable)	
	BLC	BLC / HLC / Off	
	Flickerless	Selectable	
	SSNR	Low / Middle / High / Off	
	Stabilization	On / Off	
Pan/Tilt	Range	Pan 360°(Endless) / Tilt 95°	
	Pan/Tilt Speed	Preset :	360°/sec
		Manual :	0.05 ~ 360°/sec (proportional to zoom)
		Swing :	1~ 180°/sec
	Preset	127 Preset (Label, Camera Image Setting)	
	Pattern	4 Pattern, 1200 commands(about 5 minute)/Pattern	
	Swing	8 Swing	
	Group	8 Group (20 action entities per Group)	
	Other Functions	Auto Flip, Auto Parking, Power Up Action etc.	
General	Communication	RS-485	
	Protocol	Pelco-D, Pelco-P selectable	
	Alarm I/O	4 Input / 2 Output	
	Privacy Mask Zone	8 Zone	
	OSD	Menu / PTZ information etc.	
	Dimension	Dome :	∅149
		Housing :	∅160 × 212(H) mm
	Weight	about 2 kg	
	Operating Temp.	0°C ~ 40°C	

* Specifications of this product can be subjected to change without notice.

Specifications (4 305 24 – 4 305 25

CAMERA PART	4 305 24	4 305 25
Video Signal Format	PAL	
Image Sensor	1/4" Interline Transfer CCD	
Total Pixels	795(H)×596(V) 470 K	
Effective Pixels	752(H)×582(V) 440 K	
Horizontal Resolution	550 TV Lines(Color), 680 TV Lines(B/W)	
Video Signal-to-Noise	50 dB (AGC Off)	
Optical Zoom	27x	37x
Digital Zoom	12x	
Forcal Length	F1.6~2.9, f=3.5~94.5 mm	F1.6~3.9, f=3.5~129.5 mm
Angle of View (H)	55.5°(Wide)~2.24°(Tele)	55.5°(Wide)~1.59°(Tele)
Angle of View (V)	42.5°(Wide)~1.79°(Tele)	42.5°(Wide)~1.19°(Tele)
Zoom Speed (Wide to Tele)	1.8 sec	2.5 sec
Minimum Illuminance	0.4 Lux (Color) / 0.02 Lux (B/W), 50 IRE / F1.6	0.7 Lux (Color) / 0. 6 Lux (B/W), 50 IRE / F1.6
Day & Night	Auto / Day / Night(ICR)	
Focus	Auto / Manual / SemiAuto	
Iris	Auto / Manual	
Shutter Speed	×256 ~ 1/120000 sec	
AGC	Low/Middle/High/Manual/Off	
White Balance	Auto / Manual(Red, Blue Gain Adjustable. 1800 K~10500 K)	
BLC	BLC/HLC/Off	WDR/BLC/HLC/Off
Flickerless	Selectable	
SSNR	Low / Middle / High / Off	
Stabilization	ON/OFF	
Privacy Zone	8 Masks, Spherical Coordinate	

MECHANISM PART		
Movement Range	Pan	360°(Endless)
	Tilt	90°
Speed	Preset	360°/sec.
	Jog	0.05 ~ 360°/sec. (Proportional to Zoom)
	Swing	1~ 180°/sec.
Preset		127 Presets (Label, Independent Camera Parameter Setting)
Pattern		4 Patterns [1200 Commands(Approx. 5 Minute) / Pattern]
Swing		8 Swings
Group		8 Groups (MAX. 20 Actions with The Combination of Preset, Pattern and Swing)
Other Pan/Tilt Functions		Auto Flip, Auto Parking, Power Up Action and etc.
Communication		RS-485
Protocol		Pelco-D, Pelco-P Selectable
OSD		English, Menu / PTZ information etc
Sensor Input		3 Inputs, Photo-Coupler Type, DC 5V~12V
Alarm Outputs		1 Output, Relay Output, MAX. Load DC24V 1A / AC125V 0.5A
Fan		Always ON
Heater		Operation Start from Internal Temperature 10°C
Operation Temperature		0°C ~ 40°C (4 305 21/4 305 22 Models) -30°C ~ 50°C (4 305 23/4 305 24/4 305 25 Models)

RATED POWER	
4 305 21	DC 12V / 0.8 A
4 305 22	DC 12 V / 0.75 A
4 305 23/4 305 24/4 305 25	DC 12V / 2.5 A

MECHANICAL				
		4 305 21 Model		
		Surface Mount	Ceiling Mount	Wall Mount
Material	Dome	Polycarbonate		
	Internal	Polycarbonate, ABS		
	External	Polycarbonate		
Dome Size		∅107.5 mm / ∅ 4.2″		
Dimension		132.4×129.5 mm	132.4×187.5 mm	213.2×207.5 mm
Weight (kg)		Approx 0.7	Approx 0.8	Approx 0.85 kg

MECHANICAL					
		4 305 23 Model		4 305 24/4 305 25 Models	
		Ceiling Mount	Wall Mount	Ceiling Mount	Wall Mount
Material	Dome	Polycarbonate			
	Internal	Polycarbonate, ABS			
	External	Aluminium			
Dome Size		∅107. 5mm / ∅ 4.2″		∅150mm / ∅ 5.9″	
Dimension		158.2×216 mm	274.5×227.3 mm	∅192x265.3mm	296x276.6mm
Weight (kg)		Approx 2.6 kg	Approx 2.8 kg	Approx 3.2 kg	Approx 3.8 kg

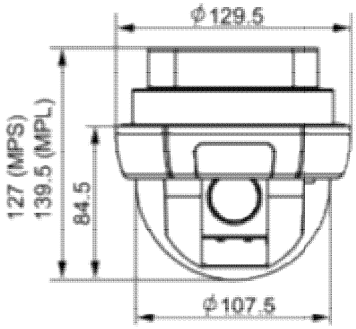
[Note]

1) Specification and features are subject to change without prior notice.
2) Specification and features are different by models.
3) Check the voltage and current capacity of rated power carefully.

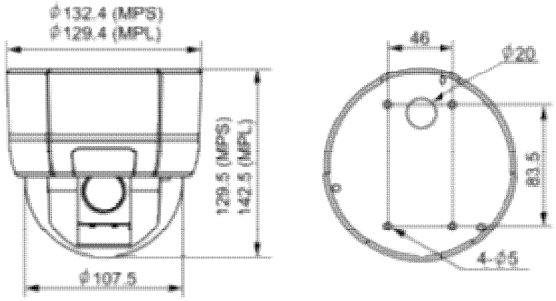
5.1 Dimension

(4 305 21 Model)

- Main Body



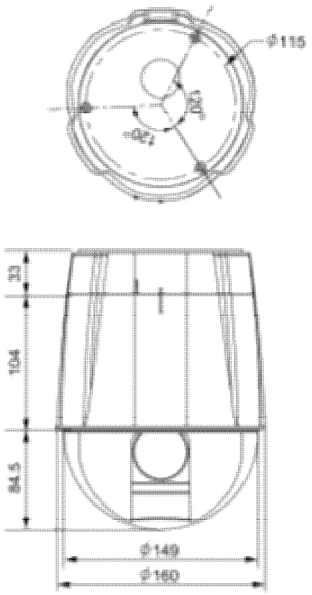
- Surface Mount Type



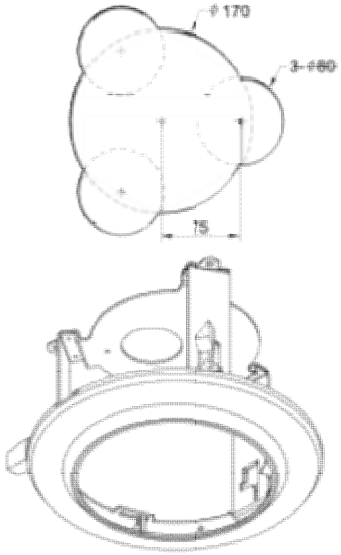
[Unit : mm]

(4 305 22 Model)

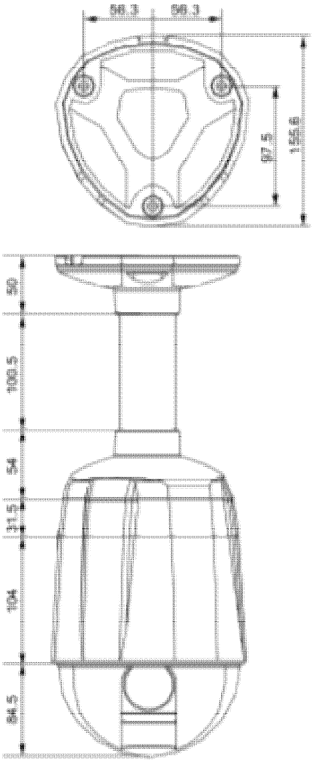
- Main Body & Terminal Cover



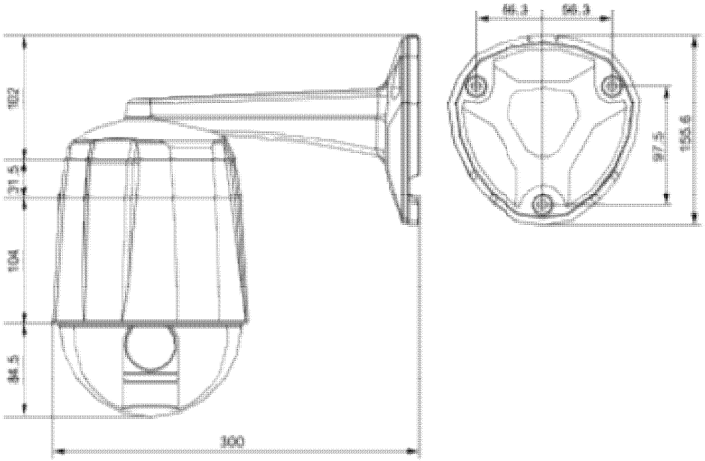
- In-Ceiling Mount Bracket



- Ceiling Mount Bracket



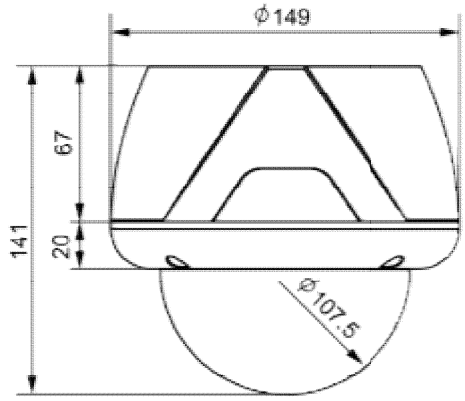
- Wall Mount Bracket



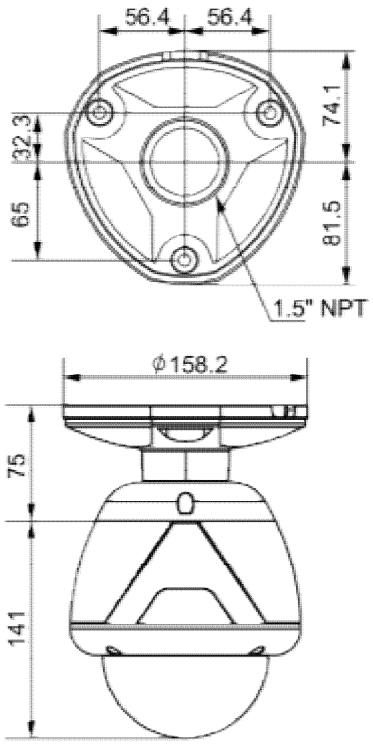
Unit (mm)

(4 305 23 Model)

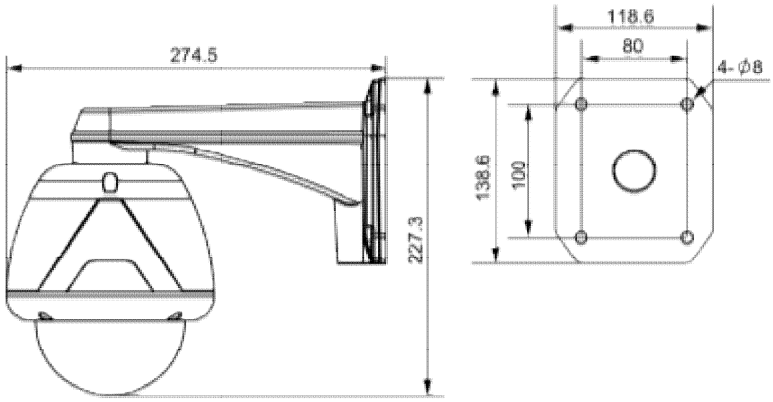
- Main Body



- Ceiling Mount Type



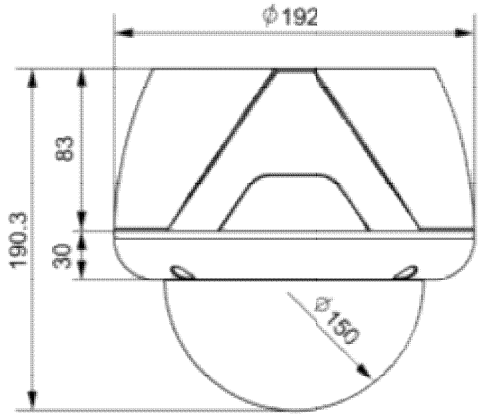
- Wall Mount Type



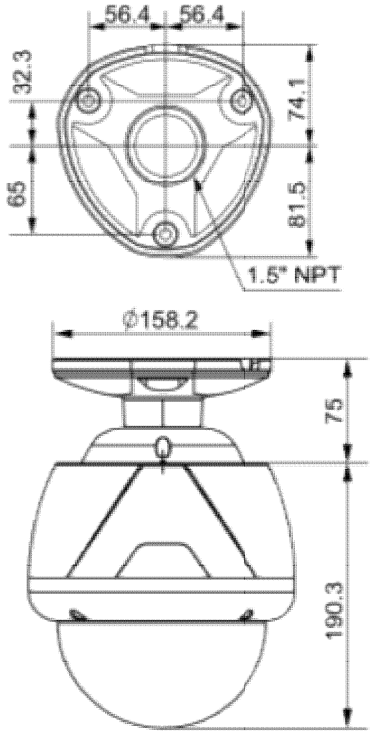
[Unit : mm]

(4 305 24/4 305 25 Model)

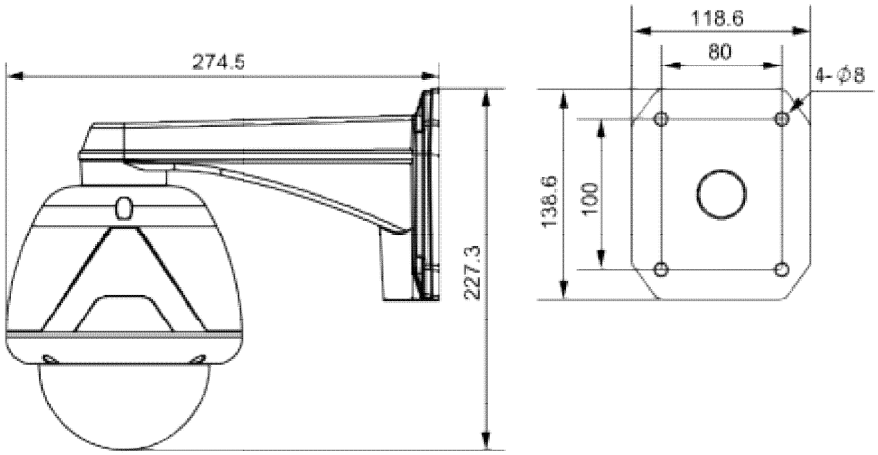
- Main Body



- Ceiling Mount Type



- Wall Mount Type



[Unit : mm]